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# Agriculture

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# AGRICULTURE

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## AGRICULTURE IN THE BRITISH ECONOMY

BRIGHTON CONFERENCE, NOVEMBER 15-17, 1956

S. R. O'HANLON, M.B.E.

*Editor, Agriculture*

Within the space at our disposal it will be appreciated that it has not been possible to do much more than, as it were, rifle through the Conference papers and point to the major issues. I.C.I. will, however, be issuing the full proceedings in the spring, and notice of publication will be given in this JOURNAL immediately the details are known.

THE wise farmer takes time off occasionally to review the conditions and circumstances of his farming, to revalue present enterprises and ponder new plans. So, too, from time to time must the farming industry study itself critically and re-examine the policies by which its future course is to be charted. It was in this spirit of self-examination and in an attempt to assess the part which British agriculture could be expected to play within the framework of the whole national economy during the next ten years that Imperial Chemical Industries convened its conference at Brighton.

**The Problems Before Us** MR. STEPHEN CHEVELEY (I.C.I.) sketched the outline of the British farming industry today, as made up of some 360,000 units, predominantly small farms of under 100 acres, and a labour force (farmers and workers) of about one million. Notwithstanding that 146,000 workers have left the industry since 1949, production has steadily risen, so that, he said, we now produce half the food we eat, compared with about one-third before the war, and spend, he said, £125 million on about 4 million tons of imported feedingstuffs. Government assistance totals £225 million a year—some four-fifths of the total profit. Three important factors interplay on the problems besetting the industry—consumer demand for cheap food, producer demand for rewarding prices and farmers' desire for long-term assurances. There are those who claim that Britain should feed herself primarily by her exports, and, no less vociferous, those who demand that the country should feed herself from her own acres regardless of cost. The truth lies between these extremes, at a point where the agricultural industry will continue to strengthen the United Kingdom's economy *as a whole*; and that implies cognizance also of world economic, political and sociological conditions. British agriculture cannot prosper in a vacuum any more than manufacturing industry can continue to regard the world as its oyster. As far therefore as we can reasonably foresee the future, we have to consider what foods, both

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for human and animal needs, we are likely to require from home and, in so far as we have the capacity to pay for them, what we can expect to get from overseas during the next ten years. What also are the likely trends in consumer demand and the standard of living? How much capital will be available for investment in the industry, especially to the small farmer? What technological and mechanical advances can we expect? What patterns of farming enterprise do we visualize? These were the problems outlined to the Conference, which comprised some thirty-six speakers and an audience of two hundred drawn from an illustrious circle of farmers, economists, bankers, industrialists, politicians and professional advisers. All met on the common ground of integrating British farming in the country's future economic prosperity, but differing views sincerely held were stated with frankness and without equivocation.

In forecasting the role of agriculture in the middle 'sixties, certain assumptions have necessarily to be made. PROFESSOR E. A. G. ROBINSON (Cambridge) was cautious. He looked at consumption trends and, allowing for the known inelasticity of demand for certain foods, thought it reasonable to expect an increased demand of 15 per cent. Of this, perhaps 3 per cent would be drawn to higher quality, leaving 12 per cent for quantity regardless of quality. Food processing and manufacture can be expected to gain greater prominence. Within this total he thought that there would be variations for the different products. In the United States, with its higher standard of living, the consumption of cereals and potatoes is less than that in Britain but much higher in meat, poultry, game, fish, eggs and fruit. To attain and keep this standard, we should have to increase home agricultural production by perhaps 20 per cent rather than rely upon greater imports, since we are likely to have to double our imports of oil and coal (notwithstanding developments in atomic energy) with probably a 40 per cent increase in overseas' buying of raw materials. The conclusion to be drawn from this, as PROFESSOR R. C. TRESS (Bristol) pointed out, is that the future holds an expanding market for food in this country, but *it must be won*; it won't fall into our laps. The agriculture industry must go on raising its productivity at the same rate as it has done in recent years. MR. J. T. BERESFORD, buoyant in his optimism and trenchant in his criticism, emphasized the importance of a climate of confidence, which is indispensable to the promotion of the industry. That marginal effort of productivity required from individual farmers is not evoked if confidence is lacking. The industry is sound and healthy. "We have the knowledge," he said, "we have the skill. We have the tools—or most of them. We have the priceless asset of a loyal and co-operative labour force. The structure is sound. Provided certain needs are met, it should not collapse if the scaffolding of subsidies is progressively dismantled." By good and full farming we can cut costs and increase productivity. We must, he concluded, concentrate on the twin essentials of capital investment and education, so creating a flexible, self-reliant, independent, productive agriculture that can meet its obligations to landowners and workers and can compete, without indiscriminate and indefinite support, and on fair terms, with any other agriculture in the world.

**Food Supplies and the Consumer** PROFESSOR E. F. NASH (Wales) and DR. JOHN RAEBURN (London) looked at the sources of our food supplies. Our heavy dependence on imported foods dates from the last quarter of the nineteenth century. By 1907 half our food supply came from abroad; twenty years later it had increased to nearly two-thirds. Since then the balance has been redressed. In 1954 the value of our food supply was £2,374 million, of which £1,179 million was con-

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tributed by our home industry—nearly 50 per cent. The world pattern of trade has also changed. Western Europe remains the main deficit region, but its production is higher than before the war. United Kingdom import reduction has been accompanied by a change in the countries from which we import. More comes from the sterling and dollar areas and less from Latin America and Europe. Professor Nash challenged the justification of continuing subsidies in a policy of agricultural expansion. He felt that the fact that subsidies have lessened the disparity between income in agriculture and other industries is one of the reasons why their cost has been accepted by the public. Their disadvantage is that they attract resources which would be better used elsewhere and they discourage enterprise within the industry. He argued for the better deployment of world agricultural resources, with United Kingdom farmers competing fully with farmers overseas. United Kingdom prices during recent years have been too high for wheat, milk, eggs and pigs, as compared with beef, mutton and lamb.

DR. NORMAN WRIGHT (M.A.F.F.) concentrated on the likely pattern of consumer demand—a not inconsiderable arbiter of policy-making. The past hundred years have seen a revolutionary change in the national dietary: a higher demand for the more attractive and more nourishing foods, and less for the cheaper and more starchy such as cereals and, to a less extent, potatoes. With the exception of fats and sugar, we have not caught up with the pattern of the American diet, and it seems that, looking westward, the major changes that might be anticipated would be towards more fruit and vegetables (particularly processed) and more meat, eggs and milk. Could British farmers satisfy such a reorientated market at reasonable prices?

The future for arable crops was the subject of SIR PETER GREENWELL'S paper, which asserted that research and the many modern aids and revised techniques available to farmers have by no means been fully exploited. It takes time for farmers to accept new ideas, but among other things stopping the average farm from achieving the productivity of which it is capable are, in his view, lack of capital, shortage of labour and the fact that a number of holdings are too small to justify the machinery needed to reduce costs of production. Farmers are loth to borrow if there is no immediate prospect of repayment, and there is an urgent need of landlord's capital to provide improved fixed equipment: increasing rents is not the answer. High arable production is likely to be a continuing need and the aim of long-term policy should, he said, be to enable farmers to meet foreign competition unaided. Production costs per acre are remarkably stable, so that increased yields, by more intensive farming, could be secured at lower costs. Some small farms would be more profitable enterprises if they turned over to livestock or vegetables. Looking over the next ten years and assuming higher yields per acre, Sir Peter visualized a decrease in the acreage of wheat, potatoes, sugar beet and oats, but an increase in feeding barley. Increased emphasis on good grassland has reduced the need for a large arable acreage.

But MR. F. G. STURROCK (Cambridge) was not altogether happy about this prognostication. We cannot, he thought, disregard the international position. Supplies might well exceed the anticipated world growth of population over the next 20-30 years, so depressing crop prices until the pendulum starts to swing in the opposite direction, reflecting demand from the industrial areas which will doubtless develop in Asia, Africa and S. America. Neither can we expect crop yields to go on increasing. Much of the improvement noted with cereals in the production of stiff-strawed varieties that will stand up to heavy manuring is already in use. Thereafter yields may remain fairly static. It would be unwarrantable to count on newer cereal varieties that will outyield Proctor barley and Cappelle wheat.



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Without a high level of mechanization, the standard of British farming would be very low indeed; yet, said MR. W. H. CASHMORE (N.I.A.E.), some of the advantages of using modern machinery are marked by the changes which have taken place. We can reasonably expect further advances in the efficiency of mechanization and some part of that improvement directed towards lowering costs of production. Organization will play an ever-increasing role in this respect, and the wise choice of machinery is, of course, a first essential. Lack of organization often offsets the saving of labour which the purchase of a machine is intended to make. "Mechanizing the small farm is a different problem," Mr. Cashmore continued. "Scaled-down equipment is not the solution and yet, when considering full mechanization with standard machines, there is a limit in size of farm and/or value of the produce below which the capital outlay on equipment reaches an uneconomic level. It seems that the solution is either to readjust the size of the holdings or let them carry on with family labour. With these farms, it is important to restrict capital expenditure on machinery to that which gives the greatest saving in man-hours."

**Pigs and Poultry** MR. W. T. PRICE (Harper Adams) considered the prospects for pigs and poultry. Five million pigs are kept on about 230,000 holdings in the United Kingdom, and of our consumption of bacon and ham 34 per cent is home produced. Bacon consumption is fairly constant, but he thought there was room for some increase in pork, of which some 84 per cent is home produced. The future of the industry lies in reducing production costs—by larger and more specialized units, improvement of breeding stock by A.I. to get better conversion and rearing figures, carcass quality and fertility, better housing, home-mixing of feed. And breeding and feeding should aim at smaller and leaner joints. The highly organized pig industry in Denmark, where breeding is based on performance and not pedigree, is a salutary example (a point underlined by MR. K. RASMUSSEN of Nottingham University).

Our poultry population is now around the 64 million mark, and 90 per cent of our egg consumption is home produced—but we are still eating about 180 per person per year less than America. More poultry meat is being produced, but here again consumption per head (5.1 lb) is appreciably lower than in the U.S.A. (36.6 lb) and Canada (28.8 lb). During the next ten years Mr. Price advised a consolidation rather than an expansion of the industry, and we should grow more coarse grains to save imported feedingstuffs. The hatching season should be spread and table poultry produced more cheaply to secure a more sympathetic market.

MR. J. A. YOUNG (N. Ireland) added that in future breeding will have to move more into the hands of poultry-keepers, since there are only about 5 per cent breeders at the moment supplying the 95 per cent of commercial producers. "We have still much to learn about breeding," he said, "but one thing is certain, and that is that the carrying out of the latest breeding techniques (either hybridization or otherwise) requires large flocks of birds and a highly organized system of recording and analysing figures. For this reason I feel that improvement of economic qualities by breeding must in future move more and more into the hands of the larger poultry-keepers."

**Milk, Beef, Mutton and Lamb** The future for milk, as seen by MR. W. R. TREHANE (M.M.B.), is tied closely to greater efficiency in production, given capital investment in new houses, buildings, essential services and a switch to the production of more summer milk from grass to avoid high winter costs. The dairy cow population has now been stabilized, but milk yields per cow continue to rise because of

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higher yielding breeds, better management and disease control. The former production difference between the east and west of England has now been levelled out, and it seems that we can expect milk supplies to continue to increase at a rate of about 25 million gallons a year for the next ten years. In the light of the present surplus, it will be asked what are we to do with it? Mr. Trehane's answer is that if consumption per head remains constant, 60 million gallons of this will be absorbed by the rising population, but it is hoped that more will be drunk per head, especially in the industrial north where consumption is still low but has shown a rapid rise over the last twenty years. This low consumption appears to be due to tradition and social barriers, which can be removed, rather than to economic reasons more resistant to change. A conservative estimate would predict an increase of 120 million gallons in liquid consumption, leaving 130 million gallons for manufacturing.

The home production of beef, mutton and lamb has to be seen in a world context, and MR. F. H. GARNER (Cambridge) introduced his paper by a short review of the comparative quality of home and imported supplies. Competition exists between high grades of home-produced and imported meat, but no low quality meat is imported. Since 1938 there has been a marked change in the consumption pattern. Whereas before the war about half the beef and veal eaten was home produced, now the figure is nearly 70 per cent. But, as regards mutton and lamb, we still import more than we produce. Mr. Garner believes that over the next decade we could produce another 170,000 tons of beef and 70,000 tons of mutton and lamb, so reducing beef imports by half and mutton by 20 per cent. Good grass must play its part in this programme, and there must be capital available for buildings, water supplies, fences and labour.

**Grass to Save Concentrates** Grass and MR. R. A. HAMILTON (I.C.I.) have almost become synonymous, and thus his paper on home feed resources for livestock was awaited eagerly. Feed is the major cost item in livestock production—some 60-80 per cent of the total—and therefore he rightly emphasized the ways and means of reducing feed cost in this country, if we are to compete effectively with overseas exporting countries. Conditions for grass production over a large part of Britain are second to none, and the crop is the cheapest feed of any for ruminants. Yet our output is deplorably low. Mr. Hamilton was in no doubt that notwithstanding we have amongst us some of the best grassland farmers in the world, by and large grass has never been seriously considered as one of our most important crops in the framing of agricultural policy. He called for a sustained effort, the right equipment, suitable buildings (the capital investment aspect again) and applied confidence to produce the extra feed which would replace some £55 million worth of imported feedingstuffs and provide for a cattle and sheep population 25 per cent larger than at present.

PROFESSOR H. G. SANDERS (M.A.F.F.) firmly supported this plea to save concentrates. "For most farmers the full exploitation of grassland is the best means of lowering costs of production," he said. The inefficiency of wasting concentrates cannot be over-emphasized. We want better grass and more reliance on it. Many farmers know *how* to farm grass better than they *do*. But where is the small farmer in this? "Economists do not tire of telling him that his smallness is the root of his trouble and that he must expand in every way he can. He must, in effect, expand his acreage by buying concentrates; he must expand his herd by allowing others to rear his replacements. Mr. Trehane, whose lively optimism is a tonic in these grim

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days, has said that the vast majority of herds in the small medium range have reached the limit of their expansion. I wish he would say a bit more about this because however willing I am to believe it, I cannot claim to be convinced. The group he has in mind is, I suppose, those of about 50-100 acres, but would he argue that the same is true of the real problem farms below 50 acres? Noble work is being done throughout the country in the matter of farm management advice, which has reached a high level of technical ability and which may be expected to get even better. In nearly all cases of small farms, the answer is to raise production, which generally means more milk. That is why I feel that Mr. Trehane's estimate of an average increase in sales off farms of 25 million gallons a year over the next ten years may be too low. Have we not taken a big bite of his 250 million gallons even since he wrote his paper, or at least in the last six months? If this rate of increase is continued, and it will not be hindered by recent experiences with beef, can we really cope with the flow?"

Turning to Mr. Garner's reference of quality in meat, Professor Sanders (Pilate-like) asked what is quality? He doubted if anyone at the moment knows what quality is or what it is likely to be in the future. How soon will it be appreciated that high quality beef, for example, must contain at least a modicum of fat? Given that an agriculture supplying a home market must unload *all* its products there, including cow beef and ewe mutton, how are enhanced prices for "these old veterans" justified? And what of the consumers' long-term reactions?

The discussion on use of land, grass and concentrates, especially with reference to self-sufficiency and the cost of purchased foods, was of particular interest to PROFESSOR D. S. HENDRIE, who is the Principal of the West of Scotland Agricultural College. For the small dairy farmer, he believed that high output to meet high overhead costs is the only way of salvation. And to get it out, he must put it in! In his view, therefore, a high degree of self-sufficiency is not for the small man: he must have high inputs of feedingstuffs and fertilizers if he is to get anywhere at all. Unlike Mr. Garner, Professor Hendrie saw no objection to the freezing or chilling of home-killed beef: he would have thought that some provision for smoothing out the autumn flush would have been acceptable all round. Chilled beef, which has a life of 40 days, would surely give a very significant breathing space in dealing with a glut. And why, in some suitably favoured area, do we not try a large-scale meat factory, on the New Zealand plan, for processing light-weight English lamb?

**Effective Labour and Capital Investment** Maximum effectiveness in the use of labour has become proportionately more important as less and less labour has become available in the farming industry. As in other industries, it is one of the first of the criteria governing increased production at lower cost. It connotes planning, more efficient equipment and long-term, as well as short-term, farm policy-making. MR. R. M. CURRIE (I.C.I.), who has had a wealth of experience in the field of management, emphasized the need for greater attention to be given to it. He argued that because most of our farms are small units, the average farmer can himself apply work measurements aimed at all-round, co-ordinated efficiency, and his men can become better supervisors of their machines and of the processes for which they are responsible. But certain capital improvements are, in most cases, almost certainly bound to be necessary, besides putting existing capital to the best possible use. It was, therefore, the view of DR. O. T. W. PRICE (I.C.I.) that generally speaking, from the national viewpoint, capital investment is justified in agriculture only when it yields a reasonable return, valuing its products at competitive world

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prices. This implies a considerable reduction in present price supports and that British agriculture must adapt itself to face world competition. He held that our farming prosperity during the next ten years must depend largely on the ability of the industry to move to the production of those products in which we have the greatest comparative advantages (or least disadvantages), reducing the unit cost of production and raising the productivity of labour—that is, away to some extent from cereal growing and towards an increase in stock farming based on intensive grassland management. The continuance of certain uneconomic farming units, he thought, cannot be justified if we accept the principle of investing capital only where it will give a reasonable competitive return: the primary need in agriculture today is to provide basic conditions for *enterprise*.

MR. ARTHUR JONES (M.A.F.F.) warmly supported Mr. Currie's paper and added that he foresaw work study being used increasingly, since there is no large and mobile pool of casual labour available in this country. The need for flexibility in farm work must put more responsibility for efficiency on the ordinary farm worker, and therefore in their training a critical approach to work methods must be fostered. But any assessment of labour performance in agriculture must be looked at from the standpoint of the seasonal nature of farming operations and remembering that the succession of farm tasks is not the same at different times of the year. Unlike a manufacturer, a farmer cannot use his men on the same machines throughout the year. He agreed generally with Dr. Price's views on the discriminating injection of capital into small farms, but he contended that in certain instances many so-called "marginal" farms in hill areas can be rescued economically, provided supplies of cheap home-grown winter food are available and housing for additional stock can be built. Current low incomes earned by such farms make it an impossible or a very slow process to accumulate the capital needed to raise productivity, erect buildings and increase stock numbers. The 85 per cent grants should help in this direction.

**The Financial Aspect** How far the banks can, and are prepared to, help with credit was a natural corollary to much that was said about increasing farmers' productivity. MR. HUGH FINN (Kent) believed that it is fairly easy for the owner-occupier in farming to find the money for a new and necessary building but much more difficult to finance the buying of the plant and machinery or livestock to go in it and so help him find the interest on the money. A more comprehensive method of facilitating farmers' credit should be devised. He suggested that, co-operation apart, perhaps something could be done by a bank sponsored on the lines of the Agricultural Mortgage Corporation, or by Government money administered through C.A.E.Cs.

MR. MALCOLM MESSER, Editor of the *Farmers Weekly*, looked into "the dark pool of subsidies" and was critical of the value of the Agriculture Act to the prosperity of the farming industry. In short, he said that the more a farmer grows of a subsidized crop, the more subsidy he receives (two-thirds of total subsidy goes to one-third of farmers), that national need and farming production have not necessarily been reconciled, and that farming returns to both farmers and farm workers are poor. The stability aimed at by the Act needs longer-term assurances. We are considering an expanding, not a diminishing agriculture, he said, and we should encourage a new approach and a new climate of thought in the promulgation of those objectives cited in the preamble of the 1947 Act. "We need more production, better living, particularly for small farmers, and continuity. The key to all these lies in enabling the farmer to farm more efficiently, to increase his output, to

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increase his profits and, not least, to increase wages. I suggest further that, as in practically every other industry, the way to do these things is through a programme of large-scale capital investment."

But Mr. A. WINEGARTEN (N.F.U.) thought that the provisions of the Act could be adapted to meet any particular set of economic circumstances and a planned policy of expansion; also that it could be used to provide guarantees to producers against undue price fluctuations if Government policy allowed market prices to be determined by the free play of supply and demand. He could not agree that capital investment should be a substitute for price support. "It is fundamentally wrong," he said, "to regard the price supports as a form of poor relief or national assistance. Their main purpose today is to protect the *average* farmer, whatever his size, against price fluctuations which follow inevitably from the proposition that, for most foodstuffs at any rate, supply and demand tend in the short run to be relatively inelastic. More capital investment will not solve this problem. Yet its desirability as a means of reducing unit costs will be seriously prejudiced if, at the same time, price assurances are withdrawn."

Considering the supply of capital, Mr. S. P. CHAMBERS, Deputy Chairman of I.C.I., warned that it cannot be provided too cheaply; that would be another form of subsidy. He remarked on the level of new savings, which in general he thought was quite insufficient to keep up with the pace of development set by the U.S.A. and Russia. Any proposals for the long-term planning of capital use in agriculture should, therefore, be looked at very carefully, remembering that, with our limited means, capital expenditure in other fields might, in consequence, have to be postponed. High taxation discourages enterprise and initiative, and the cost of present agricultural supports is naturally reflected in the present level. It would be better for the farmer to pay less tax and use his own capital. We ought to be able to place greater reliance on the value of personal incentives, and such subsidies as may, after careful review, be retained, should not bolster inefficiency but be directed solely to the purpose of *improving* the industry. What British agriculture needs, he said, is not so much an injection of new resources as a more efficient deployment of those the industry already has. Production costs must be kept down so that we can compete on level terms with unassisted imports, the lower costs deriving from increased production per acre from fewer acres.

SIR FREDERICK BRUNDRETT (Agricultural Co-operative Association) sees Government assistance to agriculture in another light, however. The general public, he declared, should realize that the farmers of this country do not want charity—as a kind of escalator to carry them up to "a plateau of ease and luxury", but a ladder leading to fair reward. "I do not quite see how we can expect to treat agriculture in exactly the same way as other sections of the community until the people are made to pay full prices for food in all circumstances, because only by this process will they get food in the right kind of perspective. . . . If the State requires the farming community to do things which it is not economical for them to do, then the State must expect to pay for it. I believe the State's money would be far better invested, to a considerable extent at any rate, in helping the farmer to help himself than in a continuance of the subsidy policy which most good farmers would like to see changed." And that in a word means co-operation, about which British farmers can learn a good deal from the U.S.A., Holland and Scandinavia.

**Compass Bearings** When, as distinct from current comment, the economic history of the twentieth century comes to be written, the rise of British farming from the Cinderella hearth of the early decades to its



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present place in the national economy will assuredly command one of its most important chapters. Our agriculture today is an industry which has been reborn in the economic stress of two world wars and their aftermath. As such, it can, if it so determines, build well and securely. The Brighton Conference has shown the present to be a time of decision and the problems to be resolved many and complex. It has taken compass bearings on a plotted course for the next ten years; and if we have been warned of the shoals, we have also been shown new horizons. Lower costs of production, greater efficiency in all things, self-reliance and the wise use of more capital—these are the bright stars to steer by.

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### *Earn it Anew*

What British agriculture requires for maximum progress in the future is confidence, capital and good management. I think the Government can claim that their new proposals have made a decisive contribution to the first two. But good management is by far the most important of the three. The Government can, as it does, provide research, advice and help: but good management depends on the farmers of Great Britain. I know that the Government and the country can rely on them for it. I have always been fond of these wise words: "That which thy forefathers have bequeathed to thee earn it anew if thou wouldst possess it." That, if I am not mistaken, is the sort of spirit that we in Britain have got to bring to all our tasks if we are to be worthy of those who come after us.

As a nation we are enjoying a breadth of life and a standard of living which would have been the envy of any generation that preceded us. Do not let us exaggerate either our difficulties or our differences. The former, though great, are manageable if we have the will. The latter are not so deep as we are apt to make out. Let us remember that agriculture is not a community on its own but a part—and a worthy part—of our nation. Let us carry out our responsibilities—industry and Government working constructively together and with a new sense of unity and purpose—to ensure that our great industry, whose welfare depends on the conduct of each of us individually, continues to play its proud part for the good of our country.

The Minister of Agriculture, speaking about the new Long-term Assurances at the Farmers' Club, November 28, 1956.

## TWO WHITE PAPERS

### LONG-TERM ASSURANCES FOR AGRICULTURE

**N**EW long-term assurances for agriculture have been worked out in consultation with the farmers' representatives, to give greater stability and future confidence to the industry, and facilitate its forward planning.\*

One of the main criticisms of the present arrangements has been that annual reviews make for uncertainty. A major consideration has, therefore, been to see whether it would be possible to avoid holding reviews every year, or alternatively whether the procedure for determining fresh price guarantees could be made more automatic and the outcome therefore more predictable. But after a thorough examination of the possibilities, the Government and the Farmers' Unions have concluded that this is not practicable. On the contrary, any satisfactory arrangements must provide for account to be taken of many changing factors before determinations can be made that are fair both to the industry and to the nation. The most important of such factors are production trends in relation to consumption requirements, the trend of the industry's net income, Exchequer liability, cost changes, world market prospects, and increasing efficiency. Not only do these factors themselves vary from year to year, but their relative importance may also vary. No formula based on these variable factors can meet the need satisfactorily. Thus annual reviews must be retained broadly on present lines and the provision of long-term assurances must be sought through minimum guarantees rather than by any attempt to determine guaranteed prices for a period of time ahead.

#### Main Proposals

1. The annual review determinations will continue broadly on present lines, subject to the new proposals described in 2-4 below.
2. An undertaking is given to maintain the guaranteed price (adjusted for any change in the basis of the guarantee) for each commodity each year at not less than 96 per cent of the guaranteed price for the previous year. In the case of livestock and livestock products, an additional provision is made that, in any period of three years, reductions in the guaranteed price for a particular commodity will not together exceed 9 per cent.
3. The total value of the guarantees, including production grants (together estimated to be of the order of £1,150 millions at present), will be maintained at not less than the amount resulting from taking 97½ per cent of the total value of the guarantees in the preceding year and adding cost increases or subtracting cost decreases that have occurred on review commodities since the last annual review.
4. Crop guarantees will be determined after each annual review for the immediately succeeding harvest, instead of for the harvest of the following year, so as more rapidly to reflect changes in costs and other circumstances.
5. Provision for special reviews is to continue, but the holding of such reviews is to be subject to new arrangements that have been agreed between the Government and the Farmers' Unions.
6. To help the industry to increase its working efficiency, there will be a major new scheme of grants for assisting the provision of permanent fixed

\* White Paper Cmnd. 23. H.M. Stationery Office, price 8d. (10d. by post).

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equipment on farms and for the making of long-term improvements to land. These grants will be at the rate of 33½ per cent, and the additional cost to the Exchequer, beyond that on other grants and subsidies, might amount to some £50 millions over a ten-year period.

The new undertakings relating to the guarantees will be observed at the 1957 Annual Review, and legislation will be introduced to give statutory effect to the new assurances and authority for the grants for farm improvements. The Government's long-term policy for agriculture continues to be to support and assist the industry to achieve maximum economic output. These new and improved arrangements should give the industry the necessary confidence for forward planning and investments, and the new improvement grants should enable the industry in due course to accelerate the rate of long-term investment that is so essential for more efficient and economic production.

### PIG INDUSTRY DEVELOPMENT IN THE UNITED KINGDOM

New proposals for the development of the pig industry in this country were announced by the Government on November 26.\* These proposals have been worked out in the light of the reports of the Committee on the Development of Pig Production in the United Kingdom (Howitt Committee) and the Reorganization Commission for Pigs and Bacon (Bosanquet Commission), after discussions with all the interests concerned.

The White Paper envisages the establishment on a statutory basis of a Pig Industry Development Authority for Great Britain with wide powers for securing improvements in production, processing and distribution; the continuation of existing guarantee arrangements, subject to a gradual raising of grading standards; and the continuation of the present free market in pigs and pigmeat. The Bacon Industry Acts, 1938 and 1939, which have been virtually suspended since 1940, will be repealed and the Bacon Development Board, the Pigs Marketing Board and the Bacon Marketing Board will be wound up.

**Pig Industry Development Authority** It is proposed that this new Authority should consist of seventeen members appointed by Ministers; fourteen appointed after consultation with the various sections of the industry and a Chairman and two members appointed from outside the industry. Its functions would include the operation of a national pig recording scheme, supervision of progeny testing, the introduction of an accredited herd scheme, the development of a national artificial insemination service, the financing of research and development work, and the improvement of market intelligence. The Authority would also be empowered to establish a British bacon mark. Finance would be provided by a levy on each pig slaughtered.

**Guarantee Arrangements** The Government are satisfied that a system of deficiency payments ensures an adequate return to the industry and allows full freedom for production in the different parts of the industry to react to normal market influences. No fundamental change is therefore proposed, but there may be modifications of the detailed arrange-

\* White Paper Cmnd. 24. H.M. Stationery Office, price 6d. (8d. by post).

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ment of quality premiums. The standard for the payment of any quality premium next year will be determined, as usual, following the Annual Review.

**Grading Standards for Bacon Pigs** As from March 25, 1957, a minimum length measurement of 775 mm (30½ inches) will be introduced into the standards of certain grades and the metric system will also be adopted for measuring back-fat. Other changes will not take effect until September 16, 1957. This will give time for producers to improve their management and technique and for further tests to be made on the most suitable point at which to take the loin measurement. The principal changes will be as follows:

1. The weight range for grading purposes to be 135-170 lb inclusive, compared with the present range of 135-180 lb.
2. The standard of back-fat grading to be raised to that of the main Continental supplies.
3. The maximum mid-back measurement to be discontinued (the minimum measurement will be retained for the purposes of classifying the under-finished or Grade "L" pig).
4. The measurement on the loin to be taken at the anterior end of the rump muscle or, subject to further tests, on the fattest part of the loin, instead of at the leanest part of the muscle.

All the foregoing changes were recommended by a Committee comprising representatives of the trade and the Agricultural Departments. The Government have taken note of other recommendations by the Committee for the future, which are (a) the possible further restriction in the weight range, (b) consideration to be given annually to increases in the minimum length for subsequent years, (c) consideration to be given to the possibility of including appraisal of conformation in the grading standards, and (d) similar reviews of the grading standards to be held from time to time.

**Marketing** The Reorganization Commission considered that because of the complex nature of the pig industry in the United Kingdom there were formidable objections to setting up a marketing board for all pigs; they made alternative proposals, but these were viewed with disfavour by the industry. The Government have therefore decided that, bearing in mind the developments in marketing which are now taking place, particularly the effective service to producers being provided by voluntary co-operative organizations such as the Fatstock Marketing Corporation, the long-term interests of the industry will best be served by allowing the present basically free market in pigs and pigmeat to continue.

*Note:* These proposals, apart from those relating to the guarantee arrangements, do not apply to Northern Ireland.

### A NEW TITLE

The Home Grown Threshed Peas Joint Committee, which was wound up on October 31, 1956, has been superseded by the **Pea Growing Research Organization Ltd.** The addresses of the new body are:

*Office:* Agriculture House, Knightsbridge, London, S.W.1.

*Research Station:* Broadway, Yaxley, Peterborough.

## ECONOMICS OF THE SMALL FARM

PROFESSOR E. F. NASH, M.A.

University College of Wales

Discusses a new report, *The Family Farm*, published by the School of Agriculture, Cambridge.

**B**Y comparison with the forms of agriculture prevailing in most other countries this side of the Iron Curtain, family farming is in this country a relatively unfamiliar institution. In many features of our agricultural organization—for example, in the size-pattern of our holdings and in the density of labour per acre—we stand between the typical peasant countries of Europe and other continents on the one hand and the United States and other more recently settled countries on the other. But we stand apart from both these groups in the relatively small proportion of our agricultural labour force which consists of members of farmers' families and the high proportion comprised of hired employees working for wages. Wales is the only part of Great Britain in which family labour has anything like the importance commonly attaching to it in most other parts of the world.

The title of this report\* might lead the reader to expect a discussion of the causes and consequences of this sociological peculiarity of British farming. This is not in fact the subject of the report. It is not with the family farm as such that the authors are concerned, but, as the sub-title more clearly indicates, with the small farm and with the conditions under which it can be made to yield a reasonable income. By "small farm" they mean the farm of 20-100 acres—that is, the size of farm which can as a rule be run today by a farmer and his wife with the help of not more than two other regular workers. It is a family farm in the sense that it can be run as a family enterprise, not that it necessarily *is* so run.

Farms of this size, the authors point out, account for just over a quarter of the cultivated land (excluding rough grazings) in England and Wales and about a third of the total number of agricultural holdings; but they represent over 60 per cent of all the holdings over 20 acres; that is, broadly speaking, of the full-time farms other than specialist smallholdings. These farms constitute a major element in the current problems of British agricultural policy because of the low incomes which they yield to their operators, even at subsidized prices. Taking as a standard a profit of £500 after paying wages to everyone working on the farm except the farmer himself, the authors give the results of a survey of small farms in the Eastern Counties and show that (leaving aside the farms on fen land, to which special considerations apply) two-thirds of those of 20-50 acres and one-third of those of 50-100 acres failed to reach this standard in the period 1952-53 to 1954-55. It is probable that over Great Britain as a whole the income distribution is similar and that if smallholdings and part-time farms on the one hand and specialist holdings on the other are left out of the reckoning, the proportion of all small farms failing to reach the £500 profit level would be nearly one-half.

**Output and Income** The main reason stressed by the authors for the low average income level on the small farm is a low level of output. A statistical analysis of their Eastern Counties' sample shows that more than three-quarters of the farms in their survey whose incomes

\* *The Family Farm: a Discussion of the Present Position and Future Prospects of the Small Farm.* Farm Economics Branch, School of Agriculture, Cambridge University. November 1956. 3s.



## ECONOMICS OF THE SMALL FARM

were less than £500 failed to achieve the output which could be expected under average conditions to give them this income. Their analysis is in terms of "net output" (that is, sales, adjusted for valuation changes, less purchases of livestock, seeds and feedingstuffs), and their calculations show that on their Eastern Counties' farms, other than fen farms, the net output required to produce an income of £500 ranges from £25 an acre on a farm of 100 acres up to £58 an acre on a farm of 20 acres. It is, of course, higher on a smaller than on a larger acreage, since when the total acreage is small each acre has to bear a larger share of the overhead items, including the remuneration of the farmer. A net output of £58 an acre is naturally more difficult to achieve than one of £25, but many succeed in reaching it and some considerably surpass it. The kinds of reorganization likely to be successful in increasing the income of unprofitable small farms are illustrated by the authors in two examples. One is a 95-acre arable and livestock rearing farm where success could, they suggest, be achieved by increasing the cropping and substituting yard feeding of bullocks for the relatively unproductive rearing enterprise. The other is a 28-acre dairy farm, where a satisfactory income level could be attained by doubling the number of dairy cows, with the corollary of depending more heavily on purchased feeding-stuffs and on purchased instead of home-reared replacements for the dairy herd.

If due allowance is made for the variation in the products and potentialities of different types of farming, there is no doubt that the main features, both of the authors' diagnosis and of their suggested remedies, can be taken as valid for the great majority of unprofitable small farms throughout the country. Other reasons for low income besides insufficiency of output are, of course, theoretically possible. As the authors themselves point out, unprofitable farms commonly have excessive costs as well as insufficient output, so that they fail to realize the income which even their low output could be expected to yield with average efficiency of operation. Apart from that, it is in theory possible to farm unprofitably by making the land produce too much as well as too little. But no one familiar with the general characteristics of small farms and with the results of survey investigations in different parts of the country can doubt that far more potential income is sacrificed by the small farmer from insufficient than from excessive output. Over-intensity of land use and over-emphasis on high output are more likely to be encountered on large than on small farms. Indeed, the only serious criticism of the general findings of this report is that output figures calculated for an income of £500 are far below the probable optimum output targets for most small farms. Given reasonably good land and competent management, most of them should be capable under present conditions of yielding a substantially higher profit than £500, and higher outputs than those indicated in the report are usually the main conditions of their achievement.

This is an important conclusion, since it has a close connection not only with the problems of advising individual farmers as to the methods of improving their own incomes, but with the general problems of agricultural policy, particularly in its bearing on prices and on the structure of the agricultural industry. For the individual farmer, the choice between different combinations of products and different output levels depends on what the different products are worth to him. The utility to the national economy of the different courses of action open to the farmer depends on what the products are worth to the country. Under a regime of subsidies and guaranteed prices it cannot be taken for granted that the intensification of output that is certainly in the interests of many individual small farmers is unequivocally desirable from the national point of view. The typical products of the small farmer—milk, pigs and eggs—are either heavily subsidized or are

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already produced in quantities which threaten to saturate the market. Moreover, the increase in output which is within the reach of the small farm today, and is a condition of its yielding the higher income of which it is capable, would certainly in some cases require increased consumption of purchased feedingstuffs. These, although wasted by some farmers, are used by others in quantities too small to give the maximum profit under present price conditions.

Those who, like the authors of this report, are engaged in trying to assist farmers to improve their management and to aim at the higher standards of output and income which present technical and economic knowledge have brought within their capacity, are therefore faced with a dilemma. From time to time they are likely to find themselves advising individual farmers in their own interests to do things which the industry has collectively been asked by the Government not to do, and of whose utility in the national interest they cannot themselves be free from doubt.

**A Limited Field of Enterprise** It is necessary to recognize that the choice of enterprise open to the small farmer is limited. He concentrates on dairy cows, pigs or poultry because their products are relatively valuable and because they yield a regular saleable output. He buys feedingstuffs because even if his own land is productive and well-managed, the condition of its capacity to yield him a worthwhile income is usually that it should carry more animals than it can itself support at economic levels of feeding. Cash crops or horticulture can, of course, provide part or even the whole of the income of some small farmers, but as effective alternatives they are dependent on favourable soil or climatic conditions and on good access to markets—advantages which many small farms do not possess. The other major branches of agriculture—namely, the cattle and sheep industries—offer much less attraction to the small farmer. Their rate of capital turnover is too slow and, except at the finishing stages, their yield of output per acre is too small to offer him enough prospect of an adequate and steady return.

These conditions are not greatly affected by changing price relationships. High or low prices may make a great deal of difference to the small farmer's income, but they are not likely to make much difference to the kind of products which it will best pay him to produce, nor, within broad limits, to the kind of methods it will best pay him to adopt in doing so. He remains more or less committed to the relatively intensive production of milk, pig-meat and eggs so long as he remains a small farmer.

The aggregate output of the typical products of the small farm is thus to a large extent a function of the number of small farmers and of their average level of efficiency in production. As the level of efficiency rises, the volume of output will also rise if the number of those who produce it remains the same. It is true, of course, that at a higher level of efficiency the farmer will be able to get a higher income than before at the existing level of guaranteed prices, and the same income as he gets now at a lower level of prices. It might be thought self-evident that increased efficiency would make it possible for small farmers to maintain their income at its present level and to produce an output no larger than they now produce at a lower cost per unit. But this does not by any means follow if the number of producers remains the same, for in that case an unchanged total output means an unchanged output per producer, whereas it is likely to be a condition of the improved efficiency that the output per acre and per producer should increase. Increased output is the only way in which an improvement enabling labour to be saved can be realized by a producer whose labour complement is fixed, as it must be on the many small farms that employ no outside labour.

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It is manifest, however, that the market for increased output of the products of the small farmer at present prices is limited. It would of course be considerably larger if the prices needed to give the small farmer a satisfactory income were closer to the prices at which the corresponding products can be imported. But the improvement in efficiency needed to enable him to compete on level terms with imports is substantial, and as long as he is unable to do so, it remains uncertain whether an improvement in efficiency which makes possible a reduction in the rate of subsidy per unit, but is accompanied by an increase in the volume of subsidized output, will reduce or increase the aggregate subsidy burden.

**The Pattern of Farm Sizes** The problems and difficulties likely to arise in this situation are, however, largely the result of the inflexibility of the size-structure of the farming industry. The proportion of farms of 20-100 acres to the total number of holdings over 20 acres has remained practically unchanged over the last twenty-five years. But the size distribution of holdings that is appropriate to one economic situation is not likely to remain equally appropriate to a changed situation. Clearly, if a threatened over-supply of certain products is the result of a particular pattern of farm sizes, it is reasonable to seek to correct it by an alteration in that pattern. Moreover, in so far as the underlying economic change takes the form of new methods of production which enable a given area to be effectively and productively exploited with a smaller amount of labour, the small farmer employing no labour but his own is unable to take advantage of it, unless he can apply his labour to a larger area than before.

These then are some of the reasons for thinking that effort needs to be devoted to a reduction in the proportion of farms in the lower size ranges. The problem is at its acutest in the so-called marginal farming areas, but it is not confined to them. A successful attempt to deal with this problem may in fact turn out to be the condition upon which the chance of maintaining future agricultural prosperity without excessive dependence on public support will, in the long run, primarily depend.

### ★ NEXT MONTH

#### *Some articles of outstanding interest*

Early Stages in Ley Establishment by D. J. COLUMBUS JONES • High Egg Production and the Small Flock by JANET S. S. BLYTH • Lucerne Stem Eelworm by E. B. BROWN • Eradicating Foot Rot by D. W. MENZIES and R. T. WRIGHT.

## PROFIT LEVELS OF THE SMALLER POULTRY-KEEPER

R. COLES, M.Sc.(ECON.), M.Sc.(AGRIC.), B.A., PH.D.

*Chief Poultry Officer,  
Ministry of Agriculture, Fisheries and Food*

The particular advantages of small poultry-keeping, in respect of labour, feeding and housing, may be lost by increasing the size of the unit.

**T**HE present-day trend in poultry-keeping in this country is towards large units. But while there are many excellent reasons for enlarging the scope of certain poultry activities, such as breeding, and although great attention is focused on these developments, we are apt to forget that about 30 per cent of all the eggs we produce still come from quite small flocks (of under 100 adult birds). Approximately another 40-50 per cent are supplied by flocks numbering between 100 and 500 layers. The large part which these small- and medium-sized flocks play in supplying the country's needs is, I fear, frequently overlooked when the future of the industry is under discussion. The answer to many of the problems of the small flock-owner is *not* to advise expansion—or at least not to advise such a step unless the difficulties in the way are explained and it is fully appreciated that the peculiar advantages of a small flock may be lost by increasing the size of the unit. For whereas expansion of the large flock usually means that greater use can be made of labour-saving devices, and that small changes will often lead to significant increases in profit, it cannot be assumed that this will also happen with the small flock.

The big poultry flock today is being operated increasingly as a large-scale industrial unit. Efforts are directed towards small savings and relatively small improvements. High costs dictate such a policy, for, because of the small size of our farms, most of these large units have to buy in the great bulk of their feedingstuffs, and they usually employ relatively highly paid skilled workers. Such high costs, even accompanied by high performance levels, make it imperative to attempt constant improvement. Bearing in mind the profit levels per bird of such enterprises, it may very naturally be asked how the small flock, usually lacking the same high standards of management and quality of food, can expect to make any profit.

**Assets of the Small Flock** The explanation lies in the special advantages which the small flock possesses. And here the obvious point must be emphasized that profits in poultry-keeping do not depend solely on high egg production. Profit is the difference between costs and income. Costs can vary a great deal with the size of unit, special local conditions, etc., and so it follows that production levels do not necessarily reflect the incidence of profit. Thus a very moderately productive flock bringing in, say, 35s. per bird at a low cost of 30s. per layer, shows the same profit margin per bird as a unit where the figures amount to 60s. for costs and 65s. for income. This is not to decry high egg production, but rather an attempt to examine what increase in profits (if any) accompanies increased egg production.

This point is worthy of consideration in some detail. The small poultry-keeper may have a flock of 100 or so birds. In many instances they are housed in a strawyard or deep-litter house, which is probably based on an existing structure—such as the adaptation of an unused building for deep-

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litter housing or the use of cattle byres for a strawyard. The housing costs, and hence the depreciation charges, are therefore low, and remain low so long as no developments take place involving heavy capital expenditure. But if the farmer finds his small flock profitable, he often thinks in terms of increasing the profit of his poultry unit by enlarging it. It is at this stage that serious consideration must be given to the question of costs and income. In particular, he must decide whether the advantages he has enjoyed as a small poultry-keeper will continue with the bigger flock, or, if not, whether the higher income stemming from the new developments will fully compensate him for the loss of these advantages.

**The Advantages Disappear** As a small poultry-keeper, it is most probable that he has left his wife or other farmhouse labour to look after the small flock. It is doubtful whether any actual wage is paid for this service. In my experience, recompense is usually confined to the retention of some or all of the "egg money" by the wife. The income thus accrues to the farmer's family in some form or other, and whether or not it is properly regarded as a labour income, it is certainly not paid to anyone outside that circle. So the unit is rarely charged with a labour cost. But if the flock is to be enlarged, it is probable that paid labour will have to be employed. This will mean a definite increase in the production costs, and may very well involve a fall (amounting even to a loss) in the profit per bird unless production is raised to a stage where the extra labour charges per bird are at least met by a higher income.

It may be possible, as the result of a farm management survey, to rearrange the labour needs of the farm so that there is some surplus. This has often proved to be the case, and the spare two, three or more man-hours per day arising from the reorganization can often be usefully directed to looking after the enlarged flock. Nevertheless, it should be emphasized that the flock itself may not in fact be profitable if labour charges thus incurred are included in the cost of the poultry flock as a unit. And if the output per bird is not increased as a result of more regular supervision, it may be far better to employ the surplus labour elsewhere.

A similar argument relates to food costs. A small flock frequently receives the bulk of its food in the form of waste and home-grown grain. Admittedly, such diets are often unbalanced and usually too low in protein, and are therefore associated with moderate to low levels of egg production. An increase in flock size will usually lead to a demand for more food than the farm is capable of supplying in the form of waste or grain. If, as a result, compounded rations are bought, the food costs per bird rise. To remain profitable, production levels must be further improved to offset this increased production cost.

Finally, a similar line may be taken with regard to housing. Any enlargement of the flock will probably mean new buildings, and again the costs, this time those relating to overheads and depreciation, increase. In fact, it may no longer be worth retaining the original adapted buildings: If they are far from the new building, the time taken in passing between the two units may so increase labour costs as to make it a better policy to concentrate the entire stock in the new building.

**Compromises are Difficult** An improvement in performance usually follows automatically when the flock is enlarged, because better food is given and more care is taken of the birds. All too often, however, the first stage in expansion is disappointing from the point of view of profitability. There is frequently a compromise over the new develop-



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ments relating to labour, housing and food. If the labour is part-time and the work on the poultry unit is allocated to someone who has interests other than poultry, the supervision of the flock may not be of a high order. In consequence, production may not increase sufficiently to offset the additional labour costs. A similar situation may arise over food supplies. A mixture of low-quality waste food and grain together with bought compounds may not be good enough to sustain better egg production from a flock which is better housed and possibly better managed, and so capable of greater production. If, however, the labour employed is enthusiastic and efficient in the management of the stock and care is taken in the correct balancing of bought and home-produced food, the flock can show a production level approaching that of the successful specialist. And this production rate can often be accompanied by below-average costs, because of the retention of some of the low-cost characteristics usually associated with the small farm flock.

**Efficiency of the Specialist** Still further increases in the flock size will, on most farms in this country, finally remove any association with low-cost, small flock activity. Most of the food will now need to be bought, although on large farms home-grown grain can be used with grain balancer meal. There will have to be a full-time poultryman, and buildings will be on a large scale, making any previously adapted building an uneconomic and petty addition if included in the main layout. At this stage, the poultry unit assumes its "industrial" aspect and its connection with other activities of the farm becomes slight. It becomes virtually a self-contained unit depending for its success solely on the quality of its stock and food and the skill of its operators.

It will be appreciated, therefore, that the specialist poultry enterprise must normally achieve higher egg production if it is to make the same profit per bird as a moderately successful small farm flock. This handicap is not always realized, but it is largely the reason why some countries having only small- or medium-sized farm units can produce eggs cheaper than we can. We, however, have very many mouths to feed, and it would be impossible to meet present demands from small farm flocks alone. We must therefore specialize or import. And since it has been shown that the former step does increase costs *per bird*, to offer competition the specialist unit must have a much higher production rate than the small farm flock.

**Improvement without Expansion** There is, of course, no overriding reason why production in small farm flocks must be low. It is true that such flocks frequently suffer from indifferent management and feeding, but in some instances—both at home and abroad—a little care and attention has led to output approaching or equalling those of the successful specialist. Clearly, it pays the small flock-owner to buy first-rate stock. Regular feeding and other points of good management, such as always having fresh drinking water available, also help to improve the paying record. Buying balancer meals to make a sound diet with available home-grown grain and waste will usually lead to an improvement in production with a very small increase in food costs. Where care is taken to see that these actions do not involve a lot of additional expense and are kept within the limits of the farm resources, substantial improvements in profit can follow. But if these developments proceed beyond that stage, then even greater care must be exercised in weighing up the advantages and disadvantages of passing out of the orbit of the low-cost, small farm flock.

## LETTUCE FOR THE MODERN MARKET

F. A. SECRETT, V.M.H., C.B.E.

*Milford, nr. Godalming, Surrey*

Mr. Secrett, the well-known Surrey market gardener, discusses present-day methods of lettuce production in Britain.

**A**FTER last year's disastrous season, the time is perhaps not really opportune to write an article on lettuce production. Certainly, throughout the whole of last year, with the exception of the very early crop under glass, lettuce was not a paying proposition. Nevertheless, more and more growers appear to be increasing their acreage of lettuce, particularly that sown in the autumn and raised under glass for planting out in early spring. Yet the last three springs have not allowed the grower with light land to bring his crop forward by planting early in February, and last season no planting of consequence was possible until late March. The result was that gluts were created late in May, when the whole spring acreage matured at one time. The price broke and under the cold, inclement weather, which lasted right up to the end of August, did not recover.

When I entered the industry over fifty years ago, the acreage under lettuce was very small, and on a 100-acre holding not more than 10 acres would be occupied with this crop during the whole year. Most of it was the cos type, for which there was always a good demand; there was very little call for cabbage lettuce. The variety of cos grown in those days was Fulham White, and much of the crop was sold to hawkers, who loaded the lettuce loose on their barrows and pony carts in the field for delivery to the shops. In fact, much of the cos lettuce was also taken to the provincial markets loosely loaded in vans.

When, however, refugees from the Continent started to arrive in this country during the First World War, they demanded the cabbage varieties, and this led very naturally to a considerable increase in the acreage of cabbage lettuce at the expense of cos. Imports from the Continent began to arrive in large quantities. There was also a change in growing methods about this time; whereas before the war few lettuce were grown under glass in England, there was a steady increase in the production of lettuce under cold and heated frames during the 1920s. At the same time, much more lettuce was imported. But in the early 1930s import duties were imposed to give a measure of protection to the growers of early lettuce under glass, and, as a result, acreages at home were increased to such an extent that on many intensive market gardens quite 30 per cent of the gross takings was derived from the lettuce crop.

So much for past history; how far have we moved away from those patterns in more recent years? I have already referred to the increasing acreage being devoted to lettuce every year, and I should like to make it quite clear at this point that the object of this article is to describe present-day methods rather than to encourage in any way a further rise in the production of lettuce.

**Winter Lettuce** The acreage of winter lettuce—that is, lettuce planted out in the open during the autumn to withstand the winter—has fallen considerably in latter years. This is mainly because the winter varieties are coarse and have to compete with more succulent lettuce which are marketed from under glass at much the same time. Another objection

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is that these winter lettuce are very often badly infected with greenfly, and unless they are grown in isolation they can become a source of infection for spring-planted crops (although it is now possible to control this pest with modern insecticides).

Two varieties of winter lettuce are being grown today—Imperial and Winter Crop. The seedbed should be well prepared and the seed sown in early September at the rate of about 4-5 lb per acre, the object being to raise small, sturdy plants ready to plant out from mid-October to mid-November. They should be planted 12 inches  $\times$  12 inches and be kept clean and free from all annual weeds. A light dressing of phosphates and sulphate of potash can be applied before planting. In normal seasons, the crop should be ready to cut in late April.

To avoid *Botrytis* attack, the land should be made very firm and the lettuce planted carefully, without damaging the stems. Planting should not take place when early morning frosts occur, since *Botrytis* becomes much more active when lettuces are frozen before the roots have had a chance to make contact with the soil.

**Spring Lettuce under Lights** It is perhaps the growing of lettuce under lights for planting out in early spring that has been most overdone in recent years. With this type of spring lettuce, it is essential that the frame-ground should be kept free from all annual weeds during the summer. This can be done by growing four or five crops of radishes before the frames are put up. The frames should be erected in early September, and the ground does not need to be in a high state of fertility for this work. If the frame-ground is given a dressing of stable manure every other year, no other fertilizers need be applied. However, if the soil is short of phosphates and potash, light dressings may be made. The varieties commonly used today are May Queen, May Princess, White Boston (which has many synonyms), Cobham Green and Gloire de Nantes. The latter variety is known in England as Feltham King.

The first sowings are made for the plants which are to be pricked out, and sowing can start on October 14 or 15. The seed should be sown fairly thickly under lights, to which air should be given immediately the lettuce are up. As soon as the plants are large enough to handle—that is, in their cotyledon leaf stage—they should be carefully pricked out 2 inches apart in prepared frames. Great care must be taken not to damage the seed-leaves. As soon as the seedlings have made contact with the soil, the lights should be aired back and front. The lights should be taken off when it is fine and replaced in wet weather, since the beds, if properly prepared, require no more overhead watering until just before planting out. May Queen or May Princess may be used for the earliest crop, and Cobham Green, Feltham King or White Boston types (many synonyms), Unrivalled, Improved, Trocadero or Borough Wonder for those following.

Although the frames for the pricked-out seedlings may be erected on the flat, those for plants that are intended to remain *in situ* during the winter should have a slight pitch towards the sun. Sowing must be done with great care and, if possible, seeds should be dropped  $\frac{1}{2}$ -1 inch apart. Sowing too thickly only courts disaster. The beds should be carefully prepared and levelled to something approaching billiard table precision; the seed should be covered to a depth of  $\frac{1}{4}$  inch by sifting prepared soil over it.

Since the lights must be removed during fine weather, the beds should be protected with cotton against birds. Mouse traps should also be put in the frames, as one or two mice can do considerable damage—indeed, they are very fond of lettuce seed. As with the pricked-out lettuce, the lights are

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taken off during dry weather and replaced immediately it rains, for any wetting of the surface is liable to cause red leg. During mild weather the lights should be left at night so as to give air back and front; in periods of extreme cold they should be shut down, especially when there is frost in the wind. If frost continues for many days, it may be necessary to protect the plants by covering the lights. If the lights are shut down and the lettuce become frozen inside, as they may well be, air must be given immediately, both back and front, when the sun gets up and the frost on the glass starts to thaw. No plant will survive being thawed out under such unnatural conditions as exist in a shut-down frame.

As soon as a mild period occurs in February, the lettuce should be planted out in the open. The usual distance recommended is 12 inches  $\times$  12 inches. Fresh manure should not be applied for this crop, but the land must be in good heart. Leeks are a good crop to precede lettuce, and if the ground has been manured for leeks, then no other fertilizer need be added. The tremendous amount of leek roots which are left in the soil are greatly appreciated by the young lettuce plants. If the soil is low in nitrogen, a dressing of 2 cwt "Nitro-Chalk" can be given immediately before planting.

*Botrytis* is the chief disease to be guarded against, and this invariably enters where the cotyledon leaves have been damaged either by frost or bad handling. But if the plants have been well grown in the frames, the cotyledon leaves should still be healthy when planting takes place. The seedlings should be planted so that the cotyledon leaves are above the soil, which means that only the roots are tightened.

**Frames, Cloches and Glasshouses** A lot of lettuce is grown under heated and cold glass, but there is still room for expansion. In heated greenhouses and frames the Cheshunt varieties are most popular today. For cold houses or frames May Queen or May Princess are better. Planting for the winter crop may take place in heated houses any time between November and January. It is essential that the lettuces should make speedy growth after planting out, and temperatures should be kept at 65-70°F for about two weeks. Once the plants are established, temperatures should be dropped to 45°F at night and 50°F during the day. Lettuce should never be allowed to dry out and watering should be done carefully round each plant with an open-ended hose. In cold houses or structures, May Queen or May Princess may be planted before or after Christmas, the usual distance being 9 inches  $\times$  9 inches. Plenty of air should be given during mild spells and the structure kept closed in cold weather, especially when it is windy. But, as recommended for the crop in frames, the plants should be allowed to thaw out with a good circulation of air if they get badly frozen.

Lettuce in Dutch lights on the flat or in cloches may be planted either before Christmas or during January, but congenial weather must be chosen for this type of culture. Distance is again 9 inches  $\times$  9 inches, and the best varieties May Queen or May Princess. The soil must be in good heart and have a fairly high water content. On clean land, carrots (Amsterdam Forcing) may be sown broadcast before planting the lettuce. The seed is raked in and the land marked out with lines 9 inches apart. The young lettuce can then be planted. *Botrytis* can take a heavy toll of this crop, so be sure to keep the cotyledon leaves above the ground when planting, and the lights should be quickly placed in position and shut down. If the lettuces get frozen, give air as soon as the sun rises. In a dry spring they will need a certain amount of extra watering, and in favourable weather this can be carried out with spray lines. As the weather improves during the spring, the lights should be kept on air night and day.

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Many growers use cloches instead of Dutch lights for this work; in fact, looking back over the years, I consider that the cloches have been more beneficial to the small grower than any other form of glass protection. Cloches have the added advantages of constant air circulation, and they are far more foolproof than cold frames.

**The Summer Crop in the Open** To obtain a continuity of supply, drilling in the open should take place as soon as the weather in the early spring permits. In many districts the main varieties used today are the White Boston types and Cobham Green. In recent years there has been a demand in some areas for Webb's Wonderful, New York or Great Lakes, which are so popular in America and are, perhaps, the most crisp of all the lettuces. Since this is a large lettuce, it must be sown 14 inches apart from row to row. Other varieties are sown with 12 inches between rows. Outdoor sowings may continue in many districts up to the first week in August. Perhaps the best variety for August sowing is Feltham King.

Summer lettuce should be sown on firm land and a dressing of meat- and bonemeal may be applied at the rate of 8 cwt per acre at cultivation time. As soon as the lettuces are through, they should be row-cropped in the early stages of their growth and set out 12 inches apart. In a cold, wet summer, many acres may have to be ploughed in because of lack of demand, but in a drought these outdoor sowings come into their own. In other words, they are a highly speculative crop. This is where holdings equipped with artificial means of irrigation always score over those dependent upon rain. The demand for salads during the soft fruit season is considerably reduced, and growers would be wise to avoid this period.

Finally, I should add a word of caution. The lettuce crop is very subject to damage by hormone sprays, not only from the particles of spray but also from the fumes. Many of our market gardens are surrounded by farms where herbicides are used. It is wise, therefore, to call the attention of neighbouring farmers to the damage they may so inadvertently cause; for, indeed, it is a sad sight to see a full crop of lettuce so harmed that the whole becomes unmarketable. If crops are destroyed by bad weather it has to be accepted as a hazard of the business, but it is another thing when a crop is destroyed by carelessness.

Next month Mr. C. G. Finch will be writing about the trials of early summer lettuce at the National Institute of Agricultural Botany.

### The National Power Farming Conference

to be held at the

TOWN HALL, CHELTENHAM

on

February 12-14

will include papers on machinery for grassland improvement and also on the financial aspects of machinery investment and maintenance.

Programmes and tickets (free) are obtainable from: The Organizer, National Power Farming Conference, Dorset House, Stamford Street, London, S.E.1.



## SHEEP CONFERENCE AT LUDLOW

E. SHAW, B.Sc.

*County Agricultural Officer, Shropshire*

AN audience of some two hundred farmers, drawn from a wide area, gathered for the B.O.C.M. Conference at Ludlow on November 20 to hear three papers by well-known authorities on sheep. Their attendance was indicative of the welcome resurgence of interest in the subject. For, as Mr. T. C. MORGAN, the Chairman of the Conference, said in his opening remarks: "There is a great future for sheep on the general farm", and while the demand for other livestock products has suffered serious set-backs, the market for lamb and mutton has remained relatively stable and reasonably profitable.

DR. ALLAN FRASER, of Aberdeen University, prefaced his paper on "Sheep Management and Nutrition" by pointing out that half the lamb and mutton consumed in this country in 1939 was home-produced, whereas today only one-third came from British farms. Profitable sheep farming under lowland conditions, he continued, depends upon getting a heavy crop of lambs. Management before tupping, during pregnancy and after lambing all have a bearing on the problem. The effects of flushing are well known, but unless the ewes are let down before being brought up in condition as they go to tup, the full benefits cannot be obtained. Pregnant mare serum, used at the right time, will also increase the number of eggs shed, but in either case a higher standard of shepherding is necessary if the best results are to be achieved.

Dr. Fraser went on to stress the need for feeding ewes adequately, particularly in the last 4-6 weeks before lambing. As regards foster-mothering, he had usually found smothering the orphan lamb with the uterine fluid of the proposed foster-mother just before she lambed to be the most successful method. It is possible to rear lambs artificially, but colostrum is just as essential for the new-born lamb as for any other animal.

The growth made by the suckling lamb is, of course, correlated with the milk produced by the ewe, and, the speaker suggested, sheep farmers would be well advised to pay more attention to selecting milky ewes rather than go for breed fetish. Lambs start to graze at about 6 weeks old, and from then on crops and milk are roughly of equal importance. Young succulent growth is essential if the lambs are to do well, but grass alone does not entirely fit the bill, since growth is too dependent on the weather. Some box feeding is therefore needed.

DR. J. R. HOLMES, of Bristol University, chose for his subject "Some Deficiency Diseases of Sheep". In particular, he dealt with pregnancy toxæmia. Widespread in its occurrence, it is found only during the later stages of pregnancy. It varies widely in incidence, but it was more common in lowland flocks which have been flushed following periods of hard weather. Affected ewes are generally found to be carrying twins or triplets—hence the other names, "twin-lamb disease" or "snow fever".

The onset of the disease is gradual; dullness, grinding of the teeth, tremors and staggers being associated with loss of condition. The head is carried high and there is often a sickly smell on the breath. Under-development of the udder makes it difficult to judge lambing time. Blindness and proneness to push the head into obstacles and to place the lips and feet in water is sometimes noticed. Affected ewes which fail to lamb often die; those which lamb normally recover.

## SHEEP CONFERENCE AT LUDLOW

Anything which interferes with the proper nutrition of the ewe in the later stages of pregnancy can result in the disease, and Dr. Holmes stressed that 24-48 hours' starvation is sufficient to give rise to the condition. Fundamentally, however, the cause is imbalance within the animal between demand and supply, and feeding concentrates during the later stages of pregnancy is the surest way of preventing pregnancy toxæmia. It is essential, however, to continue concentrate feeding daily once it has been started.

Dr. Holmes also touched briefly on three deficiency diseases caused by lack of sufficient essential mineral elements. Milk fever can be quickly cured by injection of calcium, but he warned against a sudden relapse and advocated keeping treated ewes under close observation for two or three days. Hypomagnesaemia responds to injection if the affected ewes can be caught soon enough. It is associated with improved swards, and moving the ewe flock to poorer permanent pasture is usually effective in preventing serious losses. Pine, caused by lack of cobalt, can be prevented by spraying the pastures.

Having heard the first two speakers, everyone appreciated what Mr. R. D. BYWATER then had to say on "The Management of the Ewe Flock". It was not difficult to see why Mr. Bywater is a successful flockmaster. There was nothing that had been advocated by the scientists which was omitted from his description of the management of his own flock. At the same time, there was a great deal besides woven into the picture.

High-priced land demands prolific sheep, he said, and the local breeds (Clun and Kerry Hill) are just that. It is important to maintain a balance between sheep and cattle, and, in his opinion, a ratio of 5:1 is about correct. He expressed a liking for good old turf and his advice on selecting sheep was typically succinct: "Look for a ewe which is long, lean, level and lively; avoid fat ewes like the plague."

Ewes are better for being run in fairly large lots of about 150, went on the speaker. Before flushing they must be treated for foot rot, and all broken-mouthed and unthrifty ewes should be culled. Exercise with no sudden changes of diet are important, and lambs should be trained to the foot bath whilst still suckling. Tup early rather than late, one ram to fifty ewes, mark the rams and turn them round after three weeks.

He advocated raising the level of nutrition after Christmas by feeding hay on the ground well away from the troughs. Meadow hay and swedes, in his opinion, are preferable to mangels; roots are particularly valuable after lambing. Dry lying is essential and shelters should be re-sited each year. The flock should always be lambed on fresh ground and there are, he suggested, two golden rules—never interfere too soon and observe scrupulous cleanliness. If resort has to be made to drugs, then a full course of treatment should be given. Veterinary advice should be sought early and quickly.

As befits a good flockmaster, Mr. Bywater's final words were about sheep dogs. No one should keep sheep unless he is prepared to provide himself with the essential equipment of pens, dip, footbath, shedding race and a good dog, he said. "A good dog is worth the price of two ewes and there is no pleasure in shepherding without a good dog."

## APRIL MILK

H. K. BAKER, B.Sc., Ph.D., Dip.AGRIC.

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The right varieties in the sward, correct and timely application of nitrogen, and care in planning pasture management will do much to ensure invaluable early bite for dairy cows.

FARMERS can usually expect to have an abundance of grass for grazing during May, and winter feeding can be regarded as finishing at that time on most farms. But, by the use of correct seeds mixtures, fertilizer applications and skilful management it is, in fact, possible to advance the growth of grass in spring so that normally a farmer can obtain *at least* maintenance plus two gallons of milk during the *whole* of April. Obviously this is an important consideration, for if dairy cows can be turned out three or four weeks earlier the duration and amount of hand feeding are considerably reduced and production costs are lowered. It is also generally recognized that early spring grass has a beneficial effect on milk production. In particular, the stimulating effect of April grass checks the fall in the production of autumn calvers and usually causes a temporary rise in the output of milk.

Several practical considerations should be borne in mind when planning the production of early bite. The choice of fields is the first point, for cold winds in March and April will not only reduce the growth of grass but it can be very unpleasant for cattle which have just been turned out. Thus it is preferable to have a sheltered field with a southerly aspect. Then good drainage will prevent poaching and ensure the rapid warming up of the soil, thereby encouraging the early growth of grass. Finally, when cows are turned out on a lush ley they may eat voraciously, and this may occasionally lead to bloat or scouring. Turning the stock out for a short time each day at first, and gradually increasing the daily grazing period to its normal length, usually prevents both these disorders. Because of this last consideration, it is important to think about accessibility when choosing fields for early bite.

**The Right Grass Species** Different grass species may vary considerably in the time at which they start to grow in the spring and, even within a single species of grass, there may be wide differences between various strains. Thus in perennial ryegrass, both S.24 and New Zealand certified perennial ryegrass are extremely valuable strains for early growth and are capable, when properly treated, of producing very palatable and nutritious grass early in the spring. On the other hand, the S.23 strain of ryegrass is a relatively late starter and, although most useful for grazing during other periods of the year, it should not normally be considered for early bite.

Cocksfoot is another valuable grass capable of very early growth. The bred leafy strains S.26 and S.37 may both be used for April grazing, the latter generally being the earlier. Other perennial grasses noted for their earliness are S.170 tall fescue, Alta tall fescue, and S.215 meadow fescue. Tall fescue can be extremely early in the spring, but it is a rather coarse grass and may need hard grazing at other times of the year to keep it palatable.

One of the most useful grasses for early grazing is Italian ryegrass. It is not normally persistent but establishes itself extremely quickly and, during



The farm planning should be arranged so that there is a continuous supply of grass once spring grazing starts.

Photo: Eagle Photos



An unused farm building can often be adapted to house the small flock. Note the open glass "nose" for ventilation and light.



Photos: C. T. Riley

The building is fitted with home-made feed-troughs, perches and drinkers.





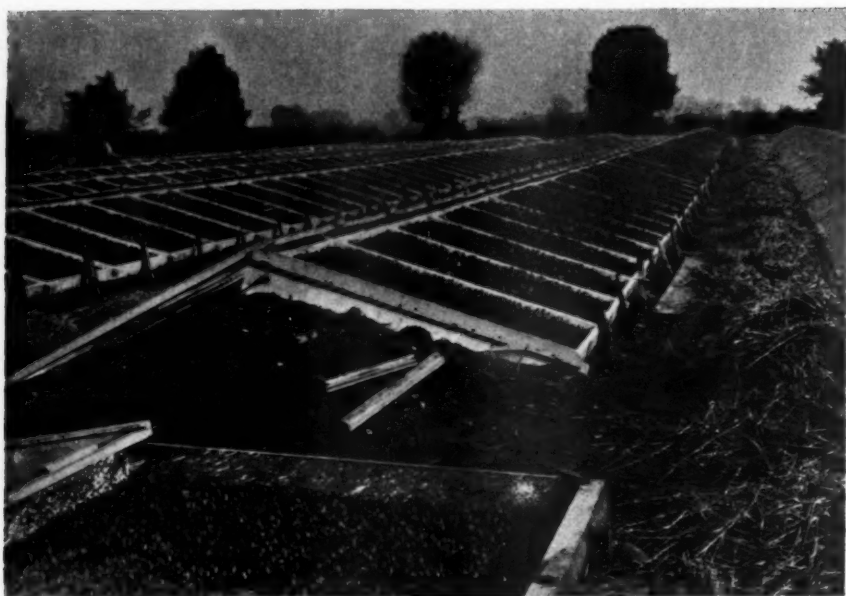
Improvised scratching and feeding places made by covering the spaces between houses.



A disused cowstall converted to take 150 layers.

Photos: C. T. Riley

**Lettuce for the Modern Market** (Article on pp. 476-9)



Spring lettuce under lights. The frames containing the plants that are to remain *in situ* during the winter should have a slight pitch towards the sun.



Photos: F. A. Secrett

Planting out cold-frame lettuce in January. Carrots have already been sown broadcast.

## APRIL MILK

the first year, produces an immense quantity of leaf, particularly in the critical period from autumn to early spring. One of the safest ways of ensuring a supply of herbage in April is to sow Italian ryegrass during August. This will give grazing in late autumn and should come away very fast in the following spring. The S.22 strain of Italian ryegrass is undoubtedly an extremely valuable addition to the strains of British grasses, and in a trial during 1956 (conducted in co-operation with the National Agricultural Advisory Service) commercial Italian ryegrass, New Zealand short-rotation ryegrass (H1), and S.22 were compared for early bite production under eight different treatments. The S.22 was superior to the others in all instances for the production of early bite. On April 6, 1956, the most productive treatments resulted in yields of about 1,000 lb dry matter per acre from S.22, whilst the other two species each yielded about 600 lb per acre.

When planning the programme for spring grazing, it is important to remember the possibility of using cereals. In particular, rye grows extremely strongly between autumn and spring and provides abundant grazing from mid-February onwards. This is probably the earliest spring grazing that will be available and should enable the stock to be turned out before the grasses are ready. If the rye is undersown with Italian ryegrass, a second grazing can be taken later in the spring, or the field may be left for a silage cut.

**Nitrogen is Essential** It is important to ensure that the correct fertilizer policy is adopted for early grazing. The phosphate, potash and lime requirements of the soil must be met if swards are to be kept in the vigorous state necessary for out-of-season production. The most marked effects in the spring are of course obtained from dressings of nitrogen. Because of leaching and the inactivity of soil micro-organisms during winter, there is little nitrogen available to plants in early spring, and not until the soil temperature reaches 42°F will any appreciable amount of organic nitrogen be available to the plants. To stimulate growth, fertilizer nitrogen must be added. There is, however, some doubt as to the best time to apply it. If applied too early and followed by a spell of cold, wet weather, much of the nitrogen may be lost before the plant begins to grow; on the other hand, it is important to have the nitrogen available for the plant when conditions are suitable for growth. As a general rule, nitrogen should be added about four weeks before the earliest grazing is anticipated—say, early in March for April grazing. A suitable rate of application would be 1½-2½ cwt sulphate of ammonia per acre, or its equivalent. The resultant herbage should yield 30-50 per cent more, and have a higher protein content, than unfertilized pasture.

The early bite grazing usually occurs before all the added nitrogen is taken up by the grasses, and some residual effect of the application may be noted in the following growth of the grass. The actual yield and time of availability of the early grass will always be dependent upon the season. The table on p. 484 shows the response of a cocksfoot sward to nitrogen dressings applied in March 1955 and 1956. In both years the season was later than normal, 1956 being exceptionally late.

A series of early bite trials has also been conducted, in co-operation with the National Agricultural Advisory Service, throughout England and Wales, and these showed that in both 1955 and 1956 the average response to 3 cwt "Nitro-Chalk" per acre in March was just over 300 lb of extra dry matter per acre during April. In view of the lateness of these two seasons, this probably represents the lowest average response that can normally be expected from nitrogenous dressings.

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### Response of Cocksfoot Sward to Nitrogen Dressings

YIELDS OF DRY MATTER (lb per acre)

		" Nitro-Chalk "		
		Applied in March (cwt)		
		0	2	4
1955				
April 21 (early bite)	...	1,060	1,300	1,660
June 7 (silage cut)	...	2,330	2,480	2,610
Total response in 1955	...	3,390	3,780	4,270
1956				
May 2 (early bite)	...	770	1,060	1,260
June 20 (second grazing)	...	430	480	510
Total response in 1956	...	1,200	1,540	1,770

It is doubtful if any nitrogen applied in the autumn will be carried over for use in the spring. There is evidence, however, that when autumn nitrogen is applied to cocksfoot swards, the extra autumn growth not only produces more keep in late autumn and early winter, but also builds up the strength and vigour of the plant so that the cocksfoot grows away more quickly in the spring. With ryegrass, the applications of autumn nitrogen results in a lush growth, which, although valuable in the autumn, does not necessarily benefit spring growth; indeed, there is some indication that this extra growth, particularly if not grazed off early in the winter, is more susceptible to winter killing than unmanured ryegrass.

**Pasture Management** In the past it has generally been considered that nitrogen is the prime factor for the production of early growth. More recently, however, the importance of correct pre-treatments has been recognized, particularly the need for an autumn rest period to build up food reserves in the leaf bases and roots. These food reserves are utilized by the plant for early spring growth. Continuous autumn defoliation prevents the plant from building up its reserves and causes it to enter the winter in a weakened condition. Similarly, if plants are grazed more than once during the winter the herbage will be replaced at the expense of reserves, and the ability to produce early growth will be impaired. In two successive years at the Grassland Research Institute a cocksfoot-white clover sward was rested during September and October and the resultant growth grazed off quickly in early November. This treatment resulted in 20 per cent more grass in April than when the same sward was grazed during September and October. Results from several similar experiments in the north and south of England have confirmed the beneficial effect of a long autumn rest on the spring yield of cocksfoot, timothy and meadow fescue. Such a rest, particularly if coupled with an application of nitrogen, should provide extremely useful grazing during November or December.

The autumn management of the ryegrasses (both Italian and perennial) for maximum spring growth is not so clear cut. In several cases a long rest in the autumn has apparently reduced the vigour of ryegrass swards, with a resultant low resistance to winter killing and a weakening of spring growth. The autumn treatment of ryegrass should strike a middle course between a complete rest and continuous grazing. Therefore, rotational grazing of ryegrass should continue during the autumn, and whenever the herbage reaches a height of about 6-8 inches, it should be grazed off quickly. Once active growth has ceased, care should be taken to clear off all the remaining ryegrass herbage as completely and quickly as possible, since too long a grazing period in the late autumn and early winter will weaken the plant. On the other hand, rank ryegrass overwinters badly and may die off.

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**Some Precautions** By using the above methods, it should be possible to produce April milk from grass in most seasons. But three major safeguards should be borne in mind. First, the production of this early grass may be upset occasionally by a severe, late spell of weather, and for such an emergency reserves of silage or other conserved fodder should be available. Secondly, the farm planning should be arranged so that there will be a continuous supply of grass once spring grazing starts. For instance, the first grazing might be on rye. This could be followed by Italian ryegrass and then by the longer duration leys, based on cocksfoot, perennial ryegrass or meadow fescue and timothy, which should have been prepared by appropriate treatments in the autumn and winter, followed by early top-dressings of nitrogen in the spring.

Finally, the initial growth of grasses in the early spring is at the expense of food reserves, and continuous hard grazing at this time may weaken the grasses to such an extent that they are unable to compete successfully with the other grasses and weeds which begin growth later in the spring. If the early species are overgrazed, they may be replaced by the late starters and the earliness of the sward will disappear. It is therefore important to ensure that April grazing is well controlled, and that after defoliation the grass has a chance to recuperate. For this purpose, the use of an electric fence (plus a back fence) is most desirable.

## AGRICULTURAL STATISTICS: ENGLAND AND WALES

### CROPS GROWN IN GLASSHOUSES\* (July 1956)

	July 1955	July 1956
<b>TOTAL AREA OF GLASSHOUSES</b>	<i>acres</i>	<i>acres</i>
With heating apparatus ... ..	3,851	3,789
Without heating apparatus ... ..	763	786
<b>TOTAL</b>	<b>4,614</b>	<b>4,575</b>
<b>CROPS IN GLASSHOUSES AT JULY</b>		
Tomatoes:		
Grown in glasshouses fitted with heating apparatus ... ..	2,431	2,299
Grown in glasshouses not fitted with heating apparatus ... ..	569	583
Cucumbers ... ..	455	464
Other vegetables and herbs ... ..	28	35
Grapes ... ..	28	32
Peaches and nectarines ... ..	17	16
Other fruits ... ..	4	3
Carnations ... ..	191	193
Roses ... ..	115	121
Orchids ... ..	10	10
All other flower and foliage crops ... ..	366	427
All other crops not specified above ... ..	76	73
Remaining glasshouse area (being the area unused at census date, or used for purposes not shown above)	324	319
<b>TOTAL</b>	<b>4,614</b>	<b>4,575</b>

\*Including Dutch light structures which were glazed at the census date. The figures are in respect of holdings which had not less than 1,000 square feet of glass *excluding* lights and/or cloches.



## TRAINING FARM APPRENTICES IN SUFFOLK

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*Organizer of Agricultural Education, East Suffolk  
Education Committee*

The agricultural apprentice scheme was established nationally towards the end of 1953, and in October of that year the first meeting of the Suffolk District Committee was held. The response from young people in the county was immediate and very encouraging. But, like any other innovation, the scheme presented some initial problems calling for a good deal of careful thought by the organizers.

**A**LTHOUGH East and West Suffolk are administratively separate, the agricultural apprenticeship scheme in the county is dealt with by a single committee, alternating its meetings between Ipswich and Bury St. Edmunds. As is usual in the scheme, the Committee draws representatives from the farmers' and workers' organizations, and co-opted members from the Education Departments, Youth Employment Service, and other interested bodies.

The first would-be apprentices came mainly from the two larger towns, Ipswich and Lowestoft, and, as far as possible, were placed on nearby farms. In some instances, however, we had to find farms with accommodation—no easy matter. Our experience so far shows that the keener type of boy—the kind likely to become the key workers of tomorrow—is prepared to live away from home and so sample the farming atmosphere all the time. But such boys are rare. The normal entrant (boy or girl) wants employment near home, so that, like any other young worker, he has not to leave friends and home interests.

One of the requirements of the scheme, as in other industries, is that the young people attend regular day classes during the first two years of employment. In May 1954, the numbers employed under the scheme in Suffolk justified starting special classes, and these were arranged at Bury St. Edmunds Technical Institute. This was in the nature of a pilot scheme, and introduced several points of interest. The classes were held on one day a fortnight during term time; they included a good deal of practical work, and the students were expected to do a certain amount of "homework". It may be of interest to see how this scheme has worked out over two years, when a first batch of students has completed a course, but first one or two principles behind this arrangement should be considered.

**Place and Method** The tendency in a number of counties today is for agricultural day classes (and many other activities in this field) to be centred on the technical colleges. Quite apart from the purely practical considerations of suitable premises, staff, etc., there is much to be said in favour of this idea. Use of such a centre gives status to a class. Going to the "Tech" or to night school is the normal thing for many young workers in other industries; it is in no sense looked upon as "going back to school" but as a step forward towards skilled employment. There is benefit, too, in young workers from different industries getting together, and the social side of attendance at a technical college can be of real value.

At the start of the scheme, when apprentices were few and widely scattered, we had to consider which system would best serve the interests and requirements of the young people. Block release—taking the students from their employment and teaching them for continuous periods of a week,

## TRAINING FARM APPRENTICES IN SUFFOLK

a fortnight, or even longer—has certain merits and may be found best in some districts, but we felt that it should not be adopted in Suffolk. Day release keeps the young worker in touch with the work on his own farm right through the year, gives him an opportunity of bringing his day-to-day problems and experience to the classes for discussion and investigation, and allows him to relate the teaching he is given to his own experience. Teaching can also be associated with current work on the farm and, since it is spread out more evenly, there is less danger of academic indigestion. The average farm apprentice comes from a secondary modern school, without an academic mind or the ability to take notes, used to activity, and less interested in principles than in practice.

Our classes have included a large amount of practical work, which, of necessity, has been largely concerned with metal work and farm machinery. In a mechanized farming district the worth of much of this may be self-evident, but, in addition, there is the general educational value of the work, which calls for careful measurement and calculation; in this the students get a feeling for metal and some understanding of mechanical principles and processes.

Homework takes two main forms. Sometimes the students are asked to investigate a particular problem on the farms where they work—why a particular breed of stock is kept, how a certain job is done, the dimensions and other considerations involved in housing certain animals, the effect and the control of certain pests or weeds, and so on. Training farmers have been most helpful in dealing with questions of this nature. At other times, the students will be set a problem to which they can find the answer from certain easily available literature, so learning to use leaflets and books of reference. Although the teacher occasionally finds a verbatim copy handed in with an air of accomplishment, this can be avoided by the warning “in your own words and, as far as possible, from your own experience”.

**All-year or Part-year Courses?** Agricultural day classes are commonly arranged for a winter session only—one day a week during the period October to early March—giving a total attendance in the year of something like 18-20 days. We considered this system, but came to the conclusion that there were some advantages in making the session longer but the times of attendance less frequent. Thus the Suffolk apprentices come to their classes one day a fortnight during each term of the technical college session, rather than just the two “winter” terms. The total number of days is only very slightly more (20 or 21) and it does ensure that some contact is maintained with the apprentice during most of the year, and that a greater range of farming operations can be properly considered in teaching, in visits, and in discussion.

It apparently fits better into the technical college system to keep the classes going in this way, rather than missing one term in three, and in practice we have found no objections to this arrangement and several advantages.

We have in these courses started with a type of student who, because of his urban background, is not the typical youngster going into agriculture. The apprenticeship scheme is quite new and may take a little while yet to get right into its stride. It will be interesting then to see if the bulk of the entrants are from the towns, as at present; in Suffolk it is encouraging to note a greater proportion of country boys coming into the scheme as time goes on.

The older type of agricultural day class was not primarily intended for the young worker; it was more concerned with the principles underlying farming practice, and was intended for the farmer's son and the farm student. In apprentice classes we are faced with the young worker who is not always

## TRAINING FARM APPRENTICES IN SUFFOLK

concerned with problems of farm management, the planning of rotations, or the farm finances, but with the detail and the conscientious execution of the work. In addition, the youngster from the town, whatever his interest in farming, may need to learn the meanings of the words and of many processes and phenomena which the country boy takes for granted.

**Further Training** We in Suffolk think these classes can be of value to young people in the industry, other than apprentices, and, in fact, we welcome all who are interested. The farmer's son, the farm student who is getting his practical experience before taking full-time training, or any other keen worker in farming, can derive some benefit from attending a day class, and it is encouraging to find that the number of students of this type is steadily increasing. Having classes of both "elementary" and "intermediate" grade (first- and second-year) running simultaneously allows some choice in the type of course which best suits the student.

In their third year, apprentices are expected to attend evening classes in their own time, and here, as in many other counties, there is some choice depending upon special interests. Classes are available in various farm machinery subjects, farm welding and other practical subjects, horticulture, dairying, and other special classes for stockmen. It is during this third year, too, that short periods of "block release" can be considered, for three-day tractor courses are well established in the county, and similar short refresher courses are being considered at the moment.

**Wide Scope** The general syllabus for these day classes may be of interest. The same subjects are studied in each of the two years, but whereas in the first year the emphasis is on the practices and processes found on the farm (of particular value to the newcomer to the industry), in the second year it is possible to build on this knowledge by considering the principles underlying good farming and good workmanship. The subjects studied are crop husbandry, livestock husbandry, farm machinery, farming science and calculations, and practical work. In farm machinery a course of study can be followed which leads to the examination for the City and Guilds Certificate, but at the moment no other examinations are being taken.

Successful courses have run over the past year at one centre in each of the two parts of Suffolk—Bury St. Edmunds and Lowestoft. With increasing numbers of students (both apprentices and others) we plan in the coming session to have separate tuition for first- and second-year students at each centre, and to run a horticultural day class as well. Suffolk is not one of the easiest of counties for communications, and it is hoped to establish at least one other centre for these classes as soon as circumstances allow.

**Organization Problems** Part-time agricultural education is no new thing, but at the present time it is developing very quickly in Suffolk, and there are a number of developments which are of particular interest. In those counties where the agricultural apprenticeship scheme is going ahead, it presents a problem which needs very careful consideration. The young worker in agriculture finds a system of training very different from that in other major industries, where apprenticeship, the technical college, day release classes, and night school are all well established. The recent White Paper on Technical Education\* provides some food for thought. Although it does not discuss agricultural education specifically, one table gives comparative figures of the percentages of boys, under 18 years

\* Technical Education (Cmd. 9703). Obtainable from H.M.S.O., price 1s. 6d. (1s. 8d. by post).

## TRAINING FARM APPRENTICES IN SUFFOLK

old, who are released from work for part-time education. In engineering it is 90 per cent; in building 45 per cent; in agriculture 1 per cent.\*

There are, of course, considerable differences between these industries, and their problems are not necessarily comparable. There are, we all know, special difficulties in agriculture—small units, seasonal work, long distances, and so on. But at a time when our industry faces many changes, labour problems, and new techniques, there is no doubt that a sound system of technical education will prove its value.

\* This relates to classes grant-aided by the Ministry of Education. There are in addition day release classes, such as those held at farm institutes, which are grant-aided by the Ministry of Agriculture and therefore not included in the statistics.

## FATAL ACCIDENTS IN AGRICULTURE, 1951-55

### ENGLAND AND WALES

Cause	Total Five Years 1951-55	1951	1955
<b>MACHINERY</b>			
Tractors			
(a) overturned ... ..	139(5)	19	39(1)
(b) other ... ..	48(15)	2(1)	16(7)
Other machinery			
(a) P.T.O. shaft ... ..	19(3)	4(1)	3
(b) other ... ..	62(4)	15(1)	14(2)
Lorries and cars ... ..	13(5)	1	4(2)
Electrocution ... ..	42	4	6
	<u>323(32)</u>	<u>45(3)</u>	<u>82(12)</u>
<b>HAND TOOLS</b> ... ..	6(1)	4	—
<b>ANIMALS</b>			
Bulls ... ..	33	8	8
Other animals ... ..	31	8	9
	<u>64</u>	<u>16</u>	<u>17</u>
<b>BLOWS AND WOUNDS</b> ... ..	13(1)	2	3
<b>FALLS</b>			
From ladders ... ..	14	4	1
From stairways ... ..	3	—	—
From stacks and ricks ... ..	15(3)	2	3(1)
From (a) tractors ... ..	31(14)	5(3)	5(2)
(b) other vehicles ... ..	33(3)	10(1)	12(1)
From other heights ... ..	18(1)	2	2
Through openings ... ..	4(1)	—	2
On level ... ..	59(10)	5(1)	17(2)
	<u>177(32)</u>	<u>28(5)</u>	<u>42(6)</u>
<b>OTHER ACCIDENTS</b>			
Poisons ... ..	4	2	1
Fires and explosions ... ..	15(6)	3	4(3)
Miscellaneous			
(a) gunshot ... ..	69(8)	15	12(2)
(b) lightning ... ..	7	1	1
(c) others ... ..	20(3)	2	5
	<u>115(17)</u>	<u>23</u>	<u>23(5)</u>
<b>Totals</b> ... ..	<u>698(83)</u>	<u>118(8)</u>	<u>167(23)</u>

Note: The figures given refer to all age groups. Those in parenthesis relate to children under 15 years of age

## SMITHFIELD, 1956

**N**EARLY 1,500 animals, representing Britain's best breeds of beef cattle, sheep and pigs, were brought to the Smithfield Show at Earl's Court last month. Together with machinery for the farmers and the meat trades, they provided an exhibition which can seldom have been equalled in the long history of this annual "Londoner's view" of the land. In addition to meat "on the hoof", consisting of 390 head of beef cattle and more than double that number of sheep and pigs, the show attracted over 400 entries for the carcass awards, including 64 bacon pigs. This was the first time that bacon had ever been shown at Smithfield and the innovation comes as a welcome appreciation of what is, after all, the final test in breeding pigs for bacon.

The livestock entries, except, of course, those in the cross-bred classes, came from pedigree herds of the established breeds. But those looking for something new were not disappointed. The Herefords included a dainty heifer, "Berkhampsted Amethyst", bred in this country from a polled Hereford dam imported from New Zealand. "Amethyst" was the first naturally polled beast of this breed to be shown at Smithfield.

The judge of the breed championships, Mr. A. D. Weber, Dean of Agriculture at the Kansas State College, Manhattan, gave the palm of victory to a cross-bred Shorthorn and Aberdeen-Angus heifer, "Highland Princess", who had been victorious at the Edinburgh show before coming to Smithfield. A fine, blue-grey animal shown by Mr. A. H. Stobo of Berwick-on-Tweed and bred by Captain B. Coutts, of Laggan, "Highland Princess", weighed 9 cwt 3 qr 23 lb at just under two years old and, when offered for sale, secured the record price of £1,600 from a Nottingham firm of butchers. The reserve champion was a Shorthorn heifer, "Princess Marina", owned by Mr. M. D. Holloway of Devizes.

This year, expert judges were of the opinion that the persistent striving of some breeders and feeders to meet the present demand had resulted in a leaner, well-fleshed but small animal. Certainly this seemed to be borne out by the sometimes marked inconsistencies in individuals of the same breed and class. Nevertheless, among the best animals quality was generally uniform and, compared with recent years' exhibits, the tendency to over-fatness had, in general, diminished. In no single breed was this uniform quality and consistent conformation better demonstrated than in the Aberdeen-Angus entries, which provided the winners of the award for the best three pure-bred steers in the face of the keenest competition from a trio of Shorthorns which were placed second, ahead of a fine exhibit of Galloways.

As one has come to expect at this show, the large entry of sheep was of a high standard and included some fine examples of the best known breeds and crosses, including a fine pen of cross-bred Southdown-Suffolk and Kerry Hill.

Two-thirds of the exhibition space this year was allotted to mechanization, and the great muster of machines, resplendent in their gay paint, noticeably attracted the attention of foreign buyers as well as the critical and exhaustive inspection of British farmers who know, none better, what their land needs. Innovations were appraised soberly and refinements judged with caution and impartiality. As well as being a shop-window of Britain's agriculture, the Smithfield show is surely one of the best examples of industry working hand-in-glove with the land and of the essential co-ordination between man and machine.

E.St.J.H.



## CONVERSATION PIECE

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From John Evelyn's writings and the pages of Merret's *Pinax*, the following reconstruction of one of their meetings reveals something of the tentative steps which seventeenth-century biologists were taking along the road of scientific investigation.

ON October 3, 1662, John Evelyn visited the College of Physicians on Amen Corner, close by St. Paul's Churchyard in London. There, so he tells us in his diary, he was received by the custodian, Dr. Christopher Merret—a learned man—who showed him the library, the theatre “for anatomy and divers natural curiosities”, and the statue and epigraph of that renowned physician Dr. William Harvey, discoverer of the circulation of the blood. One wonders what conversation passed between these two eminent men on that occasion. John Evelyn, a Fellow of the Royal Society, a man of culture and affairs, must have had his mind full of the discourse which he was to give to the Royal Society in less than a fortnight on the subject of forest trees and the urgency of replanting His Majesty's Forest of Dean and other forests with oak, so much exhausted were they of the choicest ship-timber in the world. Did he try some of his considered phrases on the man of science? “Our forests are undoubtedly the greatest magazines of the wealth and glory of this Nation; and our oaks the truest oracles of the perpetuity of our happiness . . . Improving of woods is a right noble and royal undertaking . . .”

**A Great Work.** I wonder if he asked Dr. Merret how many species of *Quercus* he was going to include in his *Pinax Rerum Naturalium Britannicum*—the list of the plants and animals of Britain which, rumour said, Merret might publish in due course? Did he ask for the truth about the curious tree at Glastonbury Abbey, which was said to burst into flower on Christmas night? And did Dr. Merret reply that there were good reasons for supposing that Dr. William Turner, the Somerset botanist and sometime Dean of Wells, knew of such a flowering last century, and that the tree would certainly be included in his list, on the authority of his old friend John Goodyer of Petersfield? But Merret undoubtedly went on to explain that it would not be listed as a Holy thorn, but as a holyoake, *Quercus natalitis Christi florens*, and its sites given as “Glassebury Abbey” and the New Forest in Hampshire. For Merret was really getting on well with the plants for his British list. He had the late Dr. How's list of plants to go on and he might be able to borrow Mr. Goodyer's valuable notes from Hampshire. In addition, he had already arranged for that excellent gatherer of simples, Thomas Willisel, to collect plants for him, and many of these might well be quite unknown to previous writers.

But the insects: they were difficult. Here in this cupboard were some of the exhibits in the late Dr. Harvey's collection. Perhaps Dr. Penney the naturalist and Dr. Mouffett, years ago, had tried to put them in some sort of order, but as there was no agreement about the names, he, as the present custodian, would have to do his best. There were the Coleoptera—the insects with hidden wings—the beetles and the locusts. “That queer creature,” he might have said, “is a *Cicindela*, or, in English, a glow-worm. Its female is wormlike and cannot fly, but it glows, while its male has wings and can fly but does not glow. That brown insect is *Forficula vulgaris*, or earwig,

## CONVERSATION PIECE

and that next to it is *Blatta foetida*, the stinking beetle of the London wine cellars. These in this box are *Cimices domestici impennies*, the wall lice or Punies."

John Evelyn, great traveller that he had been, would of course have known all about those hungry blood-sucking creatures. He had experienced their attentions in many an inn from London to Leghorn. Why, when he was lodged in that obscure Italian inn at a place called Viregio, and again at Sienna he had been sorely tried . . . that would have been in 1644. Did he then go on to tell Dr. Merret of that "sweet valley in view of Monte Alcini, famous for the rare Muscatello wine", where he had once dined on his way to St. Querico? It was just after Evelyn's visit to Florence, and he had gone to see "the gardens of the Palace of Pitti, where was every variety, hills, dales, rocks, groves, avaries, vivaries, fountains, especially one of five jets . . . everything to make such a paradise delightful . . . there was much topiary work, and columns in architecture about the hedges". In the garden there he saw a rose grafted on an orange tree. Perhaps therefore he inquired whether Dr. Merret had ever seen such a thing during his own sojourn in France or Germany.

**Strange Graft** "A rose on an orange tree?" Dr. Merret might have replied with another question: What kind of rose? He himself had studied the roses for his *Pinax*. Was it *Rosa sylvatica odora*, the Eglantine, that grows in the hedges by Darfield, or *Rosa canina sylvatica unico flore et fructu*, that grows in the fields near Hackney on the way thence to London? Or could it have been the *Rosa Provinciales sive Hollandica Damascena*, which, according to Parkinson, "hath his barke of a reddish or browne colour, whereby it is soone discerned from other roses?" Of course 1644 was eighteen years before, and Evelyn might well have replied that a lot is forgotten and a lot more learned in eighteen years. He might have been a little doubtful about it himself, "but nevertheless grafting or ineyeing or inoculating was a clever means of uniting one kind of tree with another. Now take apple trees for instance . . ." But Evelyn probably suggested they should meet again to discuss that, for no doubt the doctor's own experiments on vegetable physiology and on the healing of wounds in plants would help to explain much that was not yet understood.

**Organized Forestry** . . . In the meantime, Evelyn hoped Dr. Merret would not mind if he quoted in his forthcoming book, *Sylva*, that interesting observation of Merret's on the forest plantation practice which he had seen in France and Germany where the Royal Commissioners divide the woods and forests into eighty partitions. The idea of felling every year one partition, so that no good timber is felled in less than four score years, was novel indeed. And that undoubtedly inspired him to mention that he was going to include a chapter on the "Infirmities of Trees" in his *Discourse of Forest Trees*. He had dealt with "weeds, suckers, fern, overmuch wet, moss, ivy, misseleto, hollowness, Barkbound and B'ast". But what of the Teredo, cossi and other worms lying between the body and the bark? Did Dr. Merret agree that these "poyson that passage to the great prejudice of some trees?" And was there any better way of dealing with them, when their holes were found, than taking them out with a light incision in the bark?

**. . . and Pest Control** It would have been but a natural step to turn the conversation then to hornets and wasps. Here they were in the cabinet—*Crabra Tentredo*, the hornet or great wasp, and *vespa*, the wasp: Aldrovandus called them *Crabroneta* and *Vespeta* respec-

## CONVERSATION PIECE

tively. "Likely enough," Evelyn may have replied. But he was not going to include the scientific names, since his book was to be for the encouragement of industry. More to the point was how to destroy the wasps and hornets. Was there anything better than tar and goose-dung, or conveying the fumes of brimstone into their cells? Perhaps Merret asked, in turn, what Evelyn was recommending to destroy the caterpillars that defoliate the forest trees from time to time. Evelyn would certainly have replied: "Cut off their webs from the twigs before the end of February and burn them—the sooner the better. If they be already hatched wash them off, or choak and dry them with smoak. The smoak is made by burning moist straw and the dry superfluous cuttings of aromatic plants, such as Rosemary, Lavender, Juniper and Bays.

"And those earwigs are more troublesome on the fruit-bearing trees than on the forest trees and they are destroyed by enticing them into sweet waters." But snails, he might have added, "must be picked off betimes in the morning and rainy evenings". And as to worms, his acquaintances, those excellent gardeners, Mr. Rose, gardener to Her Grace the Duchess of Somerset, at Essex House, and Mr. Turner formerly of Wimbledon in Surrey, had had amazing results by using a decoction of tobacco refuse, especially on gravel walks, etc. But this was more of a gardening matter.

**Of Stones and Relics** Now what of the fossils and the precious stones, the agates? Would Dr. Merret show him these? Evelyn had seen some wonderful curiosities in Italy. Why, at the Palace of the Prince d'Orias he had seen whole tables "sett with achates, onyxes, cornelians, lazulis, pearls, turquizes and other precious stones". Yes, Dr. Merret could produce a few agates, some *diaphani*, a Bristol Stone, some crystals from Derbyshire, fluor spars from a field in Cambridgeshire, this toadstone, much valued by the College, and this nice specimen from Kerby Lansdale in Westmorlandia. The metals, gold, silver and tin from many parts of England, lead from the Mendips, copper from Wenlock. Indeed, it was a fine collection and well arranged.

But Evelyn was already due at Mr. Wright's, the Scotsman who had lived long in Rome and was esteemed a good painter. He was going to show him that small piece of Corregio, those ruins of Polydore, and those good achates and medailles and, particularly, that Cæsar's head of gold. . . . Dr. Merret must excuse him, it had been a most enlightening visit. He must come again. After he had bowed himself out, I can visualize the great diarist hurrying across St. Paul's Churchyard to his next appointment. Perhaps there was a whiff of wood smoke in the air to suggest the thought already put forward in that memorandum of Evelyn's, *The Fumifugium*: "It only needed a fire to get out of hand here and it would sweep the city, and the country's sadly depleted stock of oak trees and other timbers could not stand the strain of replacing the house timbers. If there were a serious fire now it might well destroy the whole City near the Waterside, all the houses from the Bridge, all Thames Street, and upwards towards Cheapside . . . even this very St. Paul's Church, that scaffolding would burn like tinder. What would become of the rest?"

And in the meanwhile did Dr. Merret, closing the door behind his famous visitor, stifle a yawn and return to his manuscript to continue with his patient compilation:

*Pinus, The Pine Tree . . . in a wood on the left hand side of Hamstead called the Pine Walks . . . a rose grafted on an orange*; and mutter "'a rose grafted on an orange'; indeed! the credulity of some men has to be heard to be believed!"

## FARMING AFFAIRS

**Revision of the Fatstock Guarantee Scheme** Changes in the fatstock guarantee scheme for the year beginning March 25, 1957, were recently announced by the Minister of Agriculture in the House of Commons. Under the revised system, the rates of guarantee will be based on the level of market prices over an 8-week period (4 weeks actual plus 4 weeks estimated), instead of the previous 52-week period. This will leave the incentive for each producer to get the best out of the market but, by taking into account four weeks' estimated prices (which will be revised each week in the light of market trends), the rate of guarantee will be in line with current market experience and will respond quickly to any price change.

There will also be a season scale of standard prices for cattle and sheep. Thus there will be higher standard prices for winter-fed than for grass-fed cattle. The scale for sheep and lambs will similarly provide higher prices when costs are greater and supplies fewer.

The full text of the Minister's statement was as follows:

"After full consultation with representatives of the producers, a new method of calculating the guarantee for all classes of fatstock has now been decided on. In order to take account of variations in costs and marketing, the standard prices for cattle and sheep will be on a seasonal scale. The standard price for pigs will be the same throughout the year. Guarantees will be announced in advance for each week and payments will be made weekly. The rate of payment will be the amount by which the standard price for the week exceeds the average of the latest four weeks' actual market prices and the estimated market prices for the following four weeks.

"This method should ensure that over the year the average return comes close to the standard price. It should also prevent violent divergencies of the average weekly return from the standard price for the week. However, to guard against abnormal price movements the stabilizing arrangements introduced this year will be continued. The standard prices, seasonal scales and stabilizing limits for the next fatstock year, beginning on March 25, 1957, will be determined in the light of the next Annual Review. The new method is fully endorsed by the producers' representatives as being well devised in the light of experience since decontrol to remedy weaknesses in the guarantee system."

### Farm and Forest:

#### 22. Uses for Willow and Poplar

The poplars and the cricket-bat willow are trees which call for special mention when writing about the utilization of farm timbers. They are primarily of particular interest to the small land-owner because their very fast rate of growth means that they quickly give a useful financial return; but, of more importance, is the fact that they are usually grown for special markets. Thus they are often worth planting even in small numbers, particularly the cricket-bat willow, since a good single tree of this species will sometimes command quite a high price.

The cricket-bat willow, as its name implies, is intended to produce wood for cricket bats. It is seldom used for anything else. Only one variety of the willow is accepted by the bat manufacturers—*Salix alba*, variety *caerulea*. The stems must be kept clean and straight throughout their growth, otherwise defects appear and make the timber unsaleable. The stem is usually allowed to grow to 10 feet before the crown is permitted to develop, and it is only this length which is bought by the manufacturer. Although the high prices paid for these trees can make their growing an attrac-

## FARMING AFFAIRS

tive proposition, there are special points to watch. Cricket-bat willow needs a good, well-drained soil and must be very carefully tended; logs may well be rejected as low quality; and, finally, it should be remembered that the cricket-bat industry is confined to the south-east, so that, in consequence, most of the buying is done in that area.

An important market for the poplars is the match-making industry and, indeed, poplar (which includes aspen) is the only timber grown in this country which can be used satisfactorily for this purpose. Well-grown, healthy trees, say 15 inches in diameter with a minimum top diameter of 8 inches, find a ready market, even in relatively small numbers. Indeed, the match industry actively supports the planting of poplars. Again, however, there are snags for the inexperienced. Poplar, like willow, needs a good soil and, although there are many varieties, only a few are likely to resist attack by canker. Any good nurseryman will advise as to which are the canker-resistant varieties—*Populus serotina* immediately comes to mind. Poplar does not need such careful tending as willow, but for rotary cutting, which is the process used in match-making, large knots are undesirable, and some pruning of branches is necessary during the life of the tree.

Poplar timber is also used in making baskets for soft fruit, watercress, etc. The size of log needed is the same as for match-making. But once again, location is important, for markets are likely to be greater in fruit-growing districts.

An outlet for timber which is perhaps not as well known as those already mentioned in these notes, is in the manufacture of paper pulp and building board, where timber in the round is used. There are only a few companies which accept wood for this purpose, and at present most of them are in south-east England. Normally the trees used are conifers—particularly the spruces—but willow (including branches and waste wood from cricket-bat willow) is one hardwood which is accepted. In the near future a mill will be operating in the west (Monmouthshire) which may accept round wood up to 12 inches or so in diameter from all the principal hardwood trees.

Further information on cricket-bat willow and poplar is contained in two Forestry Commission publications—*The Cultivation of the Cricket-Bat Willow and Poplar Planting* (Leaflet 27). Copies may be obtained from any Government bookshop.

C. D. Begley,  
District Officer, Forestry Commission

**Eleventh National Poultry Show** Only about half the country was able to send entries to the 11th National Poultry Show at Olympia last month. Untimely but necessary restrictions on the movement of birds were still in force for certain areas when the show opened, yet nearly 3,000 head of live chickens, turkeys, ducks and geese were displayed, and the table poultry section, for which extra refrigeration space had to be made available, was claimed to be the largest of its kind in the world. This exhibit, designed to show how the standard of birds sold to the customer could be improved, had the practical support of the Agricultural Departments, both of whom contributed to the prize money.

No doubt with half an eye on current trends in other spheres, the consumer's interest was centred on the price of Christmas birds. Would turkeys, for example, be any cheaper this year? From the opening of the show on December 5, there was about a fortnight in which to find the answer. Olympia was a good place to review the results of the turkey industry's efforts to produce well-fleshed, small, as well as large, birds at reasonable prices and in large numbers. As one trade buyer put it, "they've done a



## FARMING AFFAIRS

good production job and we'll do our best for the consumer". By the time this issue of *Agriculture* has gone to press, no doubt the proof of the bird will, so to speak, have been in the eating thereof.

The preparation of table poultry for marketing and cookery demonstrations were two of the highlights of the show. A complete poultry packing station showed how to prepare a bird for the customer, a process including use of the latest machine-plucking methods and the final packing of birds for sale over the shop counter. The ladies also displayed their skill in a competition in which they cooked, before the judges and in view of the public, a two-course dinner for four people, the ingredients for which might not exceed 25s. at current prices. In another part of the exhibition—and in a more romanticized setting—a "roadside" barbecue was organized by the National Egg and Poultry Promotion and the British Broiler Growers' Association. Judging by the interest shown by spectators who devoured portions of the cooked birds, this was a successful demonstration, not only of good traditional cooking, but of the poultryman's craft in providing the spring chicken out of season. It was obvious, too, that the economics of the broiler, as much as its taste, appealed to visitors, since one of these birds made a meal for four people. At home, it would probably provide a cold snack as well, and give the accolade of its succulence to a home-made soup.

**Broccoli in Cornwall** In Cornwall, broccoli is still the name of that slow-growing vegetable which takes 9-14 months to mature and is eventually bought by the town housewife as a cauliflower.

At a Growers' Discussion Meeting at Camborne on November 14, many aspects of broccoli-growing were considered. It soon became evident that different growers, each well known for the high quality of his produce, attained their ends by different routes, their ways being adjusted to meet the very wide local variations of soil and climate and modified by new developments. For example, seed sowing dates vary from late March to the beginning of May; although some growers prefer a rather quickly grown plant, others find these too soft and sappy: yet all agree that a medium-sized, unchecked plant is their aim. A rather smaller plant is needed for modern machine-planting than was preferred for the traditional planting with the Cornish shovel. Good as shovel planting can be, the planting machine is welcomed as giving better results, always provided that it is properly adjusted and the plants well graded.

Seedbed management has been markedly helped by the coming of dieldrin. Two applications are recommended, the first at the rough leaf stage and the second a fortnight later. This controls not only Cabbage Root fly but also Cabbage Stem weevil—a pest peculiarly troublesome in Cornwall and one that is not controlled by seed dressings.

If half the eventual success of the broccoli field depends on good seedbed management, half the success of planting was attributed by several growers to good pulling. The best men on the farm should be engaged on pulling, if they will put pride in their pockets and undertake a job they "don't belong to do". Should the plants be loosened before pulling, thus retaining the full tap-root, or is this bound to buckle up in planting—a feature that was unanimously agreed to be undesirable? Opinions at the meeting varied.

Spacing involves consideration of implements, plant population and the desired size of head. It was observed that the French use different spacings for broccoli intended for the English and German markets. The general consensus of opinion was that the usual 7,500 plants per acre was likely to give the highest proportion of "24s", bearing in mind that rows must

## FARMING AFFAIRS

be adjusted to the wheel-track of the carts which will be taken into the field at cutting time. Similarly, the traditional banking-up of broccoli, questioned in some quarters, was approved for the support which it gives to the young plant, its contribution towards water run-off and its help in keeping the ground clean.

Almost every grower has his own individual ideas about manuring; but all have the common aim of providing a continuous supply of nutrients over the long growing period. The farmer-grower will use a dunged and ploughed-in ley: others, probably when the crop follows early potatoes, will supplement residues with top dressings. Assuming that these dressings take 3-4 weeks to act, the appearance of the first stragglers was suggested as being the indication for a top dressing correctly timed for the main cut.

Hollow butts also came under discussion. Plants so affected are being viewed with increasing suspicion on the markets, because it is impossible to assess the extent of the trouble from superficial examination. Boron deficiency may often provide a clue to the cause, but this is evidently not the entire explanation of the defect. It is prevalent this year, as are rough and bracted heads, and the audience heard something of the research work in progress at Seale-Hayne College on the latter subject. It was explained that the cool weather in August induced the start of flower-bud initiation, but, in the warmer September weather, plants reverted to some leaf formation, so that rough heads became common during the autumn. Fundamental discoveries of this sort, while not yielding immediate practical results, will be invaluable to those responsible for plant breeding work and for producing improved strains of broccoli.

Katharine H. Johnstone,  
*County Horticultural Officer*

**Farmers' Credit** Farmers are all too often diffident about seeking the help which professional men can give. This point came out at a recent meeting of the Caldbeck (Cumberland) Discussion Group. The speaker was Mr. G. DICKINSON, a banker, and he was talking about the all-important subject of credit. He explained how farmers should go about raising a loan; it was, he pointed out, no use approaching the bank manager for an overdraft without being able to give him a word picture of the farm, to explain the purpose for which the money was needed, and to give him some idea how and when the loan was to be repaid. He alleged that too many farmers spend too much time on manual labour and too little on considering the business aspects of their farms. He fully appreciated the differences between farming and industry, but pointed out that every manager of an industrial concern knows to a penny what profit he is making on different commodities. It is equally important that a farmer, who may have seven or eight enterprises on one holding, should keep a strict control over his finances and know to what extent each department is pulling its weight. He also stressed the need for keeping adequate records and drew attention to the help that the N.A.A.S. could give in connection with farm management advisory work.

Referring to another professional man, the accountant, Mr. Dickinson said that the annual balance sheet drawn up by the accountant could give the farmer a lot of information by indicating where profits were being made and, possibly, also being consumed by losses in other departments. A business-like approach by the farmer might well mean the difference between getting credit and being refused.

F. W. Steele

## FARMING AFFAIRS

**Shepherd's Guide** Much of the lore of shepherding is embedded in accumulated experience, but to this the modern shepherd has been required to add the findings of science. Whereas not so long ago the causes and attempted control of disease were hedged about by superstition, today organized research has given to the farmer and shepherd sure means of their early recognition and treatment. But preventable losses in flocks still occur, which suggest failure to carry out recommended procedures in day-to-day management. As a ready source of help in this connection, Dr. J. Russell Greig's *Shepherd's Guide*\* can be strongly recommended. In addition to a general commentary and a glossary of terms, the booklet is divided between bacterial, virus and rickettsial diseases, functional disorders, diseases of unknown origin and internal and external parasites. Gaelic and Welsh synonyms of the various diseases and parasites are also given.

**Agricultural History Society Conference** Papers read at this year's winter conference of the British Agricultural Society, which was held in co-operation with the Association of Agriculture at the Institute of Education, University of London, were devoted to the history of farming techniques. They comprised "The Plough in Britain", by Mr. F. C. Payne, of the Welsh Folk Museum, St. Gargans; "The History of Plant Propagation in England", by Miss E. M. Marston, of the University of Nottingham; and "Grasses and Grassland Cultivation, 1500-1900", by G. E. Fussell.

The next (annual) conference of the Society will be held about the end of April, and at this meeting it is customary for papers to be given over to local history or some aspect of economic or social history. For the benefit of members who may be unable to attend the Society's meetings, some conference papers are subsequently reprinted in the Society's biannual journal, *The Agricultural History Review*, which is distributed free to members. The Hon. Secretary of the Society is Mr. J. W. Y. Higgs, Museum of English Rural Life, 7 Shinfield Road, Reading.

**Animal Health Services in Great Britain, 1955** The Report on the Animal Health Services for 1955,† which was published last month, offers heartening evidence of the success being achieved in the battle against contagious disease in our farm animals. Thus during the year under review there were only nine outbreaks of foot-and-mouth disease, and the number of cases of swine fever was also slightly lower than in 1954. There has been no outbreak of sheep scab since 1952, and the disease may now be regarded as eliminated from Great Britain. On the debit side, there were twice as many outbreaks of anthrax and, after an improvement in 1954, fowl pest increased again almost to the level of 1953.

A special feature of the report is an account of the progress towards the eradication of bovine tuberculosis over the twenty years since the first Attested Herds Scheme was introduced in 1935. At the end of 1955 nearly two-thirds of the cattle in Great Britain had achieved attested status, and there is every reason to hope that by the early 1960s bovine tuberculosis in Great Britain will, for all practical purposes, be a thing of the past.

As in previous years, other topics dealt with in the report include the regulations for preventing the introduction and spread of disease, the measures taken to protect animals in transit, animal health questions in connection with the export trade, and the work carried out by the Veterinary Laboratory Research and Investigation Services.

\* Second Edition (Revised) 1956. Department of Agriculture for Scotland. Obtainable from H.M. Stationery Office, price 4s.

† Obtainable from any Government bookshop or by post from H.M. Stationery Office, P.O. Box 596, London, S.E.1, price 5s. (5s. 3d. by post).

## IN BRIEF

### Leaf Protein and Poultry

Grass, whether fresh or dried, is too bulky and fibrous to form much more than 20 per cent of poultry diets. But if the protein in grass or other herbage is concentrated, by expressing the juice by machine and coagulating the protein by heat, the resulting fibre-free product containing 35-50 per cent of crude protein can be used to replace the protein concentrates, such as fishmeal, normally used in poultry mashes.

The value for poultry of leaf-protein concentrates made from lucerne has recently been tested at the Grassland Research Station, Hurley. In these trials growing and laying pullets were given mashes containing protein in one of three forms—lucerne leaf-protein concentrate, groundnut meal, and fishmeal.

The results indicate that the nutritive values of leaf-protein concentrates vary. Only the best produced a growth rate in pullets 10-12 weeks old equivalent to that obtained with fishmeal. This may be due partly to the lower digestibility of the lucerne protein and also to changes brought about by the heat treatment. None of the leaf-protein concentrates tested was the equal of fishmeal for egg production. The eggs laid by birds given lucerne protein concentrate mashes had dark orange yolks, whereas with groundnut meal and fishmeal the yolks were of a very pale yellow.

### Check your Spray Discs

Spray discs get worn with use, so it is as well therefore to check the size of the hole before spraying is started again. Since discs are made in sizes measured in 64ths of an inch, a twist drill of the same size makes a useful gauge. If worn discs are used the effect is similar to that produced by using larger ones, and the pressure at the nozzle drops when the potential output of the discs exceeds the capacity of the pump. Fruit growers may like to know that nozzle outputs for a given disc size and at various pressures are tabulated in the Ministry's Advisory Leaflet No. 324. A free copy is available from the Ministry (Publications), Soho Square, London, W.1.

### Mountain Milk

Farmers in some mountainous parts of Austria are now sending their milk down the mountain by pipeline, instead of by trucks over poor, difficult roads. This novel method, reported by the International Federation of Agricultural Producers, was first experimented at Mittersill. A farm lying three thousand feet above the town and a mile away was connected by a plastic pipeline with Mittersill and enough milk was sent through it for normal delivery in 21 minutes. The pipeline is washed between milkings. Similar systems are being adopted at several places in Austria.

### New Head for F.A.O.

Mr. B. R. Sen of India has succeeded Dr. P. V. Cardon (United States) as Director-General of F.A.O. Educated at Calcutta and Oxford, he began his career with the Indian Civil Service in Bengal in 1922. He was Ambassador to the United States and Mexico from 1951 to 1952 and Ambassador to Italy and Yugoslavia from 1952-54.

### Digestibility of Heather

About ten years ago Thomas and Dougall, working in south Northumberland, found that the maximum yield of crude protein and other nutrients in heather was reached at seven years after burning. This year, Allan Smith and Brynmor Thomas of King's College, Newcastle upon Tyne, have carried investigations further by examining the digestibility of heather at three, seven and fourteen years after burning (*J. agric. Sci.* No. 4, 1956).

At four years after burning, the heather sward on most moors will usually yield substantial amounts of edible material which is still of relatively high quality, while at ten years it will, on the Northumberland moors at least, be considered ready to be burnt again. It is a fact, however, that heather is grazed, and frequently hard grazed, when much less than four years old; the youngest shoots may, indeed, be eaten within twelve months of burning. The age at which heather becomes "old", and no longer merits its place on the ground, is a matter of opinion and will vary with soil and topographical conditions, but it is probably true to say that, under most circumstances, the rotation should not be much longer than twelve years.

The results of this latest investigation enable significance to be attached to trends which had already been observed; for example, a decline with age of the digestibility of the organic matter, carbohydrate fraction and crude protein. This decline appears only after a lapse of seven years from burning. Starch equivalents as calculated in the conventional way (37.0, 36.6 and 29.1 for 3, 7 and 14-year-old heather) suggests that, for the provision of energy, heather is at least equal to much of the hay which is hand-fed to hill sheep in winter.

### Sire of 33,000

It is reported from Copenhagen that a bull of the Red Danish Dairy Cattle herd died recently after 7½ years' breeding service. During this period the bull had 33,000 offspring, which must be considered a new Danish record. This figure underlines the great importance of artificial insemination in Denmark and of the value of this procedure which permits a far more extensive utilization of a valuable bull than was possible previously. About 80 per cent of the total figure of 1.5 million Danish milch-cows are now registered with cattle-breeding societies for artificial insemination purposes.

### Mating Range of Queen Bees

Improvement of bee stock depends on pure matings of queen bees. The isolation of breeding apiaries is therefore of the highest importance. Recent studies by Dr. D. F. Peer, formerly of the Experimental Farm at Ottawa, indicate that such apiaries should be at least 8-10 miles apart.

Droneless nuclei containing genetically-marked virgin queens were established at zero, four, six, eight, ten, and twelve miles from a group of colonies stocked with genetically-marked drones. Matings were obtained in queen colonies separated from the drone colonies by a distance of ten miles, but none occurred at twelve miles. The frequency of mating declined beyond the six-mile station.

Although artificial insemination of queen bees is an integral part of the study of bee genetics by the research worker, the application of this technique is not practical for the commercial queen breeder. By paying strict attention to the location of breeding apiaries, the queen producer would avoid impure matings.



## IN BRIEF

### Fragmentation in France

In France, as in many other parts of Europe, farm fragmentation is a major problem. No less than half the arable land is split into small pieces and the average owner-occupier holds 18 scattered parcels of land of an average size of only two acres each. The waste of effort in working such holdings is obvious. So is the difficulty, even impossibility, of using modern methods and modern machinery.

Official action in the last hundred years has done something to check the spread of fragmentation, but it has done little to reverse the process by securing consolidation. The peasant's sense of ownership and the value of small parcels of land as rungs in the agricultural ladder have outweighed the advantages of more compact, more economic holdings.

In the *Journal of Farm Economics* for November 1956, Ronald Gatty of Cornell University describes the effect of the latest measure for combating fragmentation. This is a law of 1945 which re-enacts an earlier Vichy law. More positive than earlier legislation, it encourages local initiative in preparing schemes for the re-allocation of land, establishes a procedure and arranges for the provision of financial and technical assistance from the government. The working of this Act is illustrated by a case-study of *remembrement* in a Champagne village. The difficulties were great, yet despite mistakes and opposition, substantial benefits were secured by pooling and redistributing a considerable proportion of the village's land. Most of the farmers now realize the advantages they have gained and a few appreciate that, as technical knowledge advances, further consolidation will be necessary.

### Plastic Silos

A new type of silo has been developed in America by the State University of New Jersey. It consists of a huge plastic bag in which, it is claimed, high quality silage can be made in relatively small quantities of up to, say, 75 tons. It is claimed, too, that this type of silo reduces spoilage and loss of dry matter. No construction or excavation is required, so the plastic silo can be sited wherever convenient.

The materials at present used in these types of silo are polyethylene or polyvinylchloride sheets, though thinner and cheaper materials are now under trial. A sheet is made up in the form of a sleeve, which is laid on the ground like a gathered stocking with the bottom pulled in towards the centre to provide an airtight base. The silage is then stacked within the sleeve in rings of decreasing size, flexible fencing being used as formwork to keep the bag in shape while each ring is being made. When the final ring has been completed, the last circle of formwork is removed and the sleeve is pulled over the stack and tied at the top with a cord. The silage is now packed in an airtight container, which encourages rapid establishment and provides ideal anaerobic conditions. Such treatment also prevents the growth of mould, limits the rise of temperature to a degree which cannot be harmful to the quality of the silage, and keeps dry matter loss to a minimum.

Plastic silos are now available commercially in the U.S.A., but it is emphasized that practical trials under farm conditions will be necessary before this technique can be generally recommended or accepted.

## BOOK REVIEWS

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**British Friesians: A History of the Breed.** J. K. STANFORD. Max Parrish. 18s. 6d.

It would be difficult to visualize farming in Great Britain without the black and white Friesian cattle. It is, perhaps, more difficult to appreciate that fifty years ago the British Friesian Cattle Society did not exist. Lt.-Col. Stanford gives a most readable account of the development of the society since its establishment in 1909, and in no way minimizes the difficulties with which the society has been faced in its short history. It has had to deal with such problems as the desirability, at various times, of importing cattle from Holland, South Africa and Canada; the fixing of the type of cattle to be admitted to the herd book; the integrity of some of its members; and many other difficulties. The history deals fairly with many of these early problems and gives, at the same time, descriptive thumbnail sketches both of the people and animals whose influence has been most marked in the establishment of the breed in this country. Differing opinions there may be as to the correctness of the views held by the society on a wide range of subjects, but all will agree that the society cannot be accused of not facing up to the problems it has encountered.

Not the least interesting of the topics dealt with is the early history of the herd, and for this the author has consulted a number of leading Dutch authorities. He explodes the commonly held belief that Friesian cattle have remained unaltered in Holland for 2,000 years. In fact, by British standards, the Friesian cattle which are kept in Holland today are a comparatively new breed some 200 years old. Nevertheless, the author has established the great influence which cattle imported from Holland have had on the cattle of this country over a long period.

The council of the society itself financed an import of animals from Holland in 1914, and made a handsome profit on the transaction. This enabled the society to achieve financial stability at an early stage, and the funds at its disposal were used to publicize the breed, mainly by giving generous grants towards the cost of showing animals. The consistent success of Friesians at all leading shows has played no small part in keeping the breed in the public eye.

The author is to be congratulated on a fascinating story.

R.E.

LD  
0 X **Infancy in Animals.** MAURICE BURTON. Hutchinson. 18s.

Two classical works on the lives of young animals were published in 1912, and both are out of print. *The Infancy of Animals*, by Pycraft, attempted to systematize the behaviour and colouring of young animals in relation to evolutionary trends, whilst *The Childhood of Animals*, by Mitchell, dealt particularly with parental solicitude and the significance of play-antics. During the past decade, there has been a renewal of interest in animal behaviour, and the results of modern techniques have displaced former beliefs by new (and often controversial) interpretations of phenomena such as colour-patterns and play.

Dr. Burton has wisely avoided taking part in the controversy in a book of this character, his view being that such matters should either be dealt with at length or left alone. The scientific attitude is again evident in his connotation of terms; "infancy" is used only when referring to animals showing a marked degree of "parental care", and the latter term bears no obligatory implication of an emotional bond between the parties. Although thereby restricting his intellectual scope, the author safeguards himself against the hypercritics and consolidates the background of his treatise on the biological significance of infancy, which not only includes the behaviour of parents towards their offspring but also the impact of offspring on the lives of the parents!

This book contains a wealth of astonishing facts which will enlighten even the most knowledgeable zoologist; and the author is to be congratulated on the judicious steering of his literary passage between the Scylla of academic pedagogy and the Charybdis of plebeian appeal. Perhaps he is at his best on the parent-offspring relationship in birds, of which there are some 8,000 species, each with a different story. Recent researches on the oldest living bird, the kiwi, reveal extraordinary behaviour by the male. The chapter "Controlling the Family" summarizes the latest information on delayed implantation of embryos (marsupials, badger, stoat) and on reabsorption of embryos (rabbit and hare)—discoveries which may shed new light on the natural control of mammalian populations.

D.S.MacL.

## BOOK REVIEWS

**Ask the Fellows who Cut the Hay.** G. E. EVANS. Faber. 25s.

Blaxhall is a remote village in East Suffolk, some six miles from the sea. To it, eight years ago, came Mr. George Evans and found there the remnant of an old community whose life and times belonged to a past era. His diligent oral inquiries and searching through books and manuscripts have produced an interesting vignette of local rural history covering the last fifty or sixty years. Drawing upon the memories of old people, Mr. Evans found that he was, in fact, living with history, for here at first hand was authority in the matter of local lore, old farming custom and practice and the repository of much which would soon be lost to the sweeping tide of twentieth-century progress.

Robert Savage, now aged 79 and the last of a long line of shepherds, started work when he was twelve as "the lowest form of life" on the farm—the back'us boy. From making up the copper fire and chopping the kindling, to feeding the fowls and bringing the cows in from the marshes, odd jobs kept him on the go for twelve and more hours a day—all for £1 a quarter plus a few perquisites. But Robert Savage thought it a good job for a boy in spite of its arduousness: "They looked after you and larned you well: they gave you a proper cultivation . . ."

Prissy Savage, Robert's wife, recalled a life typical of that of most women of her time married to a farm worker and having to bring up a large family on a small wage. Babies for her and lambs for Robert—this was the usual pattern of the spring of the year. With little money coming in, bread, bacon and beer were the staple articles of diet, and all these she prepared at home—the bread from flour ground at the village mill, the bacon drying in the backhouse chimney, and the beer brewed from locally grown barley.

Naturally, with the coast only six miles away, few of the old-time villagers of Blaxhall were innocent of smuggling cargoes of spirits, tea and tobacco up the estuary. Many are the tales told of dark adventure and sudden tragedy in running contraband under the noses of the soldiers and preventive men. But of the legends and superstitions which still cling to this little rural world, the story of the Blaxhall Stone is of particular interest. It is a huge mass of sandstone weighing about 5 tons and lies in the yard of Stone Farm. When it was first turned up during ploughing it is said to have been no larger than the two fists of a man. Nothing will shake the belief of the old 'uns that "the stone dew grow", just as it used to be widely believed that soil flints grew and increased in number.

Mr. Evans can be well assured that the writing of this Blaxhall chronicle will be accepted gratefully by a wide circle of readers, who will have nothing but praise for his patience and industry in the assembly of supremely interesting material.

S.R.O'H.

**Breckland.** OLIVE COOK. Robert Hale. 18s.

Miss Cook first describes the Breckland from the historical viewpoint and shows that the area has much of interest. Neolithic man, flint knappers' barrows and ruined buildings of antiquarian interest are discussed at great length. The descriptions of churches also occupy a considerable part of the book, and whereas such a lengthy discourse may seem justified to some, to others it will seem disproportionately long.

The characteristic scenery of the Breckland with its heaths, bracken and heather is vividly portrayed. However, from the agricultural aspect, this book is of little value and the section devoted to farming is too short, and gives no idea of the difficulties of wresting a living from this part of East Anglia. Agriculture is the major industry of Breckland and is worthy of more attention. Some mention is made of the present leaders of light land farming, such as Lord Iveagh, but insufficient credit is given to their pioneering spirit.

A little attention is given to the activities of the Forestry Commission and its influence on the social problems of the Breckland, but here again more technical data and an explanation why it was necessary for the Commission to start planting would have been welcome.

The wild life of the area is unique, and Miss Cook describes fully such items as the habits of the stone curlew and the uses of the duck decoy. It is a pity that more comments are not made on the excellent pheasant- and partridge-shooting enjoyed in the Breckland and its impact on social life. During the agricultural depressions shooting was more important than farming!

This book should, therefore, appeal to those who like a local guide with a strong historical, architectural and naturalist bias. It will not attract the agriculturist.

M.J.A.J.

## BOOK REVIEWS

o X **The Rabbit.** (New Naturalist Special Volume). HARRY V. THOMPSON and ALASTAIR N. WORDEN. Collins. 16s.

It is sad to think that there are children today to whom Peter Rabbit is a character in a book and not the rabbit they have seen at the bottom of their own garden. This state of affairs may not last, but that is poor consolation for a bereft generation.

In a way, the rabbit had certainly outstayed its welcome as far as farmers and foresters were concerned, and for these few years of respite which myxomatosis has given us we should be grateful, for they come at a time when we desperately need a little economic easement.

In case anybody has forgotten the desperate situation to which our agriculture had been brought between the wars by the flood of cheap, imported produce, and the way in which tumbledown pasture, thorns, weeds and rabbits had spread over the face of the countryside, let him refresh his memory from this book. Among other things, it tells how a body of research information was built up in a comparatively short time to replace the previous desperate ignorance about the rabbit's ecology. The situation was so deplorable that these loosely-linked inquiries had been begun even before World War II, when only a few visionaries or diehards had the courage to stigmatize the rabbit as a pest. The war, of course, demanded and secured an all-out offensive against the rabbit, and by the time it was over we knew enough to keep rabbits down to reasonable numbers on most kinds of farming country.

The authors summarize the research which had been made before the end of the war, and from there they carry on the story where they themselves took it up. H. V. Thompson has been with the Ministry of Agriculture for many years now, and he had already put in much hard work on the ecology of rabbits before he was engrossed with the recording of the myxomatosis epizootic. Much praise is due for the speed of adjustment which made it possible for him to study the progress of the disease so carefully and fruitfully. A. N. Worden has supplied, with equal competence, a summary of the voluminous literature on the physiology of the rabbit and the story of the research in West Wales after the war, which laid bare, in the clearest terms, the economic iniquities of the rabbit. The authors were well chosen to cover this needed ground between them.

H.N.S.

o X **Hot Water and Steam in the Dairy.** (Farm Electrification Handbook No. 4). The British Electrical Development Association.

\*Those who plan and advise on the services needed in farm dairies, and the more enlightened farmers, will find this handbook particularly valuable, for it describes clearly and in detail the methods of producing hot water and steam on the farm in electrical installations. With the help of good illustrations, a description is given of the working principles of each type of installation with its advantages and disadvantages, and from this information it is possible to decide which are the most suitable electrical appliances for various sizes of herd and milking systems and also the cost of operation.

The three main methods of heating water electrically—non-pressure, pressure and cistern-type heaters—are described, and the significance of the position of the thermostat and heating element is discussed. Details of subsidiary methods of heating using immersion heaters and electric washboilers are also included.

In the section on steam raising, both the "direct" and "storage" type of equipment are given with their relative advantages and the problems involved in installation and maintenance, particularly scale formation.

The first 20 pages of the handbook deal with the general principles of milking and the cleaning of equipment. This is the least valuable part, as these subjects are dealt with more fully and objectively elsewhere and the book would be just as useful without it. The farmer would be unwise to accept unquestioningly all the statements in this section. For example, it is argued that steam is the best way of sterilizing farm dairy equipment, without making reference to the relative costs of other methods. This may be true in some instances, but it is an oversimplification and is certainly not universally applicable.

Copies of the handbook can be obtained from local Electricity Boards or from the British Electrical Development Association, 2 Savoy Hill, London, W.C.2.

F.H.D.

## BOOK REVIEWS

**Treasury of Trees.** H. L. EDLIN and M. NIMMO. Countrygoer Books. 75s.

This book is indeed a treasury. Mr. Edlin's books always please a wide circle of readers and this new publication will be welcomed by all tree lovers. In its preparation, Mr. Edlin has been assisted by Mr. Nimmo, who is described on the title page as "forester and photographer". He is more; he is an artist with the camera. The 380 photographic illustrations are most effective and show a verity of form and detail which only the highest class of drawings and paintings achieve. Both text and photographs contribute to the appeal of the book, and so honours must be shared between the two compilers who, it is hoped, will be encouraged by their success to further co-operation. Is it too much to hope for a pocket-size handbook, with commentary and photographic illustrations, as a handy and authoritative guide to tree recognition, rather like some of the excellent books available today on British birds?

*Treasury of Trees* is handsomely bound; good-quality paper has been used, and the print is large and clear. No less than 140 different trees are described and illustrated, so there should be few critics of Mr. Edlin's selection. The purpose of the book is to provide a good deal of general information about each type of tree, and then facilitate its recognition by describing its habit of growth, root, cone, bark, leaf or other characteristics. It succeeds admirably.

R.G.A.L.

**Cheese and Butter.** (The Countryman Library, No. 10). V. CHEKE and A. SHEPPARD. Hart-Davis. 9s. 6d.

*Cheese and Butter* is not a text-book and therefore not intended for the professional cheese- or butter-maker. It is written essentially for the farmer's wife or other countrywoman who knows nothing about cheese- or butter-making, but has small quantities of milk to dispose of. A glossary defines the few technical terms which are used.

The introduction outlines the classification of cheese. It is surprising that no mention is made of White Wensleydale, a popular variety in the north-east; it is also unfortunate that the inaccurate statement "much British cheese is sold ungraded and unmarked" is made. On p. 29 the minimum fat content of graded hard-pressed cheese is given as 45 per cent in the dry matter; it is, in fact, 48 per cent for creamery cheese. The consumption and the nutritive value of cheese are also discussed.

In subsequent chapters, methods of making semi-hard, soft, and acid-curd varieties of cheese and the equipment required are described in simple terms. The final chapters describe methods of making cream, butter, Yorkshire curds and yoghourt.

This little book will provide the answers to many of the inquiries received by dairy schools and farm institutes.

F.C.W.

**High Output from Grass on a Small Farm.** GLYN WILLIAMS. Imperial Chemical Industries.

Success stories in farming, as in other spheres, have a national attraction. This one is an example of commendable achievement in grassland husbandry, and is an account of how good and profitable grass utilization is being accomplished on a 55-acre dairy farm on the boulder clay of the Holderness plain.

Among the many standards and targets which are set before the farmer today, high output per acre and per animal are regarded as "musts" for profitable milk production. The farm described in this booklet has these objectives in sight. In 1954, 67 per cent of the total milk produced on this farm came from grass, as compared with 32 per cent in 1950, and during this period the true annual yield per cow rose from 875 gallons to 1,086 gallons, and the calculated milk production per acre to 446 gallons.

Mr. Williams asserts, with some emphasis, that high and profitable yields from grass alone are possible "if you have the cows and if you have the grass". He might have added "if you have the farmer who has the knowledge, the ability and the determination to apply it".

Copies of this booklet may be obtained free from Imperial Chemical Industries Ltd., Agricultural Sales Department, 61 Curzon Street, London, W.1, or from any I.C.I. Sales Office.

S.C.



## BOOK REVIEWS

**Farm Service Buildings.** HAROLD E. GRAY. McGraw Hill. 59s. 6d.

Professor Gray has written this book primarily for the student as it follows the pattern of a course which he supervises as Associate Professor of Agricultural Engineering at Cornell University. But it is a comprehensive work covering a wide field, and is of interest to those who use farm buildings as well as those who design and construct them.

The book is confined to farm buildings and structures and the materials used in their construction. The layout of farmsteads is discussed but the planning of farmhouses is not. The design of individual farm buildings, their insulation and ventilation, the storage of grain, potatoes, apples and other crops, with a section on the remodelling of existing buildings, all come within the scope of this well-produced book, which is amply illustrated with photographs and line drawings. The 450 pages are printed on good paper and it is handsomely and durably bound, as befitting a book to be used for day-to-day reference.

Though the book is written for students and practitioners in the United States, the British reader will find much of interest in it. The sections dealing with construction in timber, and particularly the use of timber connectors, are of considerable interest. The design of timber structures is an art which has been forgotten by some, and has remained unlearned by many, during the timber-starved period suffered by this country during and in the years following the Second World War. This book provides a mass of useful information on the proper and economic use of timber in farm buildings, and illustrates techniques which have developed as a result of the ready supply of this versatile material in the United States.

There is increasing interest these days in the insulation and ventilation of farm buildings, and the chapter on this subject is of great interest; it contains a concise and simple exposition of the physical principles involved, followed by a section on their practical application. While extremes of climate encountered in the United States make it necessary for careful attention to be paid to what Professor Gray calls environmental control, the coming of the broiler house to Britain—perhaps the first agricultural building in this country which has to be properly insulated and ventilated—and the condensation so often encountered in the modern, single-storey cowhouse, are ample justification for close study of this aspect of farm-building design. It is pleasing to note that the "U" factor is used in the United States in the same way as in this country as a heat-transmission co-efficient.

Landowners, farmers, and their advisers will all find something of value and interest in this book and it may stimulate the thoughts of those with an experimental turn of mind.

J.F.C.

**You and Your Diesel.** Shell-Mex and B.P. Ltd.

Not so many years ago, it was feared that diesel engines would never be satisfactory for use on farms, because they would be too susceptible to grit for them to be operated in dusty fields. This has proved to be wrong, and although much of the credit for the success of farm diesels must go to the efficient systems of fuel filters incorporated in modern engines, part of it must go as a tribute to the skill of farmers and their workers in handling mechanical equipment. Any new information that will help in the efficient operation and maintenance of diesels is always welcomed by farmers, and will be particularly acceptable in these times of fuel shortage, because good maintenance can save fuel as well as promote the engine's reliability.

There is plenty of information of this kind in the booklet *You and Your Diesel*, even though it was designed primarily to be read not by agricultural users, but by the operators of road transport vehicles. It describes the safest way of storing fuel and it gives quite detailed technical information about the engine's fuel injection equipment. Lubrication is treated fully and there is a concise description of why "heavy duty" lubricating oils are particularly desirable in diesel engines. An important paragraph gives a detailed routine for changing over from the use of straight mineral lubricating oils to "heavy duty" detergent oils.

Copies of this booklet may be obtained free from Shell-Mex and B.P. Ltd., Consumer Trade Department, Shell Mex House, Strand, London, W.C.2, or from any Shell-Mex and B.P. representative.

H.J.H.

## BOOK REVIEWS

X **Black's Veterinary Dictionary** (4th Edition). W. C. MILLER and G. P. WEST. A. and C. Black. 35s.

The authors and publishers are to be complimented on the attractiveness of the fourth edition of this standard reference work. It is more than a dictionary; it is a compendium of veterinary science with emphasis on the science, and will continue to be of practical value to all concerned with animal health and welfare, both at home and overseas. The format is of the usual dictionary type, and the text has been revised extensively, taking into account the many new drugs, new anaesthetics and new techniques introduced for the treatment of animal diseases. Smog, night lighting in poultry houses, fluorine, artificial insemination, and new diseases such as muscular dystrophy and hyperkeratosis in cattle, and "slipped disc" in the dog, are covered by new or revised items.

The entries are in clear, concise English, and correct technical terms are employed throughout. The theme is clearly "what it is", and not necessarily "what I should do myself", so the volume has distinct educational and practical value—ideal for the aspiring "cowmaster". Veterinary science is not simple and the authors have realized the absurdity of attempting to reduce it to a popular level.

Members of the older generation will be regaled to note that alcohol is reinstated as a stimulant instead of a soporific, and doses of spirits are prescribed under certain circumstances for farm animals. Among points of criticism, it must be said that the text insufficiently stresses that on no account should carbon tetrachloride be given to cattle; and a description of the Elastrator method for castrating lambs, which is now being used on an increasing scale, could have been included with advantage. I wonder, too, why Grass disease in horses is thought to be due to a bacterial toxin, and why the new Complement test for Johne's Disease is damned with faint praise. Diathesis, which is defined as "Constitution (which see)" is extremely neat, but a search for the entry was in vain!

W.L.S.

**Agriculture and Industry Relative Income.** J. R. BELLERBY *et al.* Macmillan. 30s.

It is a recognized fact that since 1939 the level of farm incomes, compared with those of industry, has risen substantially in most countries. This, however, is in marked contrast to conditions over the past hundred years or so, when the ratio of farm income to other income per head has generally remained remarkably low in the greater part of the world.

J. R. Bellerby and his colleagues at the University of Oxford, Agricultural Economics Research Institute, have made a detailed examination of farmers' incomes, past and present, in order to compare them with other occupational earnings. This survey covers five selected countries—the United Kingdom, Canada, the Netherlands, Sweden and Eire—together with fifteen others, including the United States, in less detail. The scheme of research has been to discover historically the average ratio between farm and non-farm incomes. From this factual basis Mr. Bellerby assesses the fundamental causes of the disparity, the likelihood of their continuance, and the possible emergence of any new factors which might affect the ratio. In conclusion, he suggests certain principles which should underlie any attempts to prevent a renewed collapse of farm incomes.

After a thorough appraisal of the economic and social aspects of the study, it is concluded that a world crisis and, with it, unemployment, would have most damaging effects upon agriculture. It is equally important that a similar result would probably follow continuing full employment and the emergence of a world food surplus, coupled with the inability of individual farmers to diminish their output.

To maintain a reasonable parity between farm and non-farm incomes, Mr. Bellerby affirms that the outcome of national political and economic planning will be of great importance. Ways should be found of avoiding agricultural surpluses, and for this purpose reasonable forecasts of world demand are essential. Steps should be taken to absorb farm labour in other forms of employment—a contrast to the policy of settling smallholders on the land in the inter-war years, which he terms "economically retrogressive". Finally, consideration should be given to the concept of an agricultural profession by which entrants to farming might be judged.

This admirable book is analytical, critical, painstaking; the product of close, careful and worthwhile study. Its principles and practical considerations highly commend themselves to both administrators and students of agricultural affairs as a valuable further stage in the solution of a problem which is vital to us all.

S.T.M.

## BOOK REVIEWS

X **Silage** (2nd Edition). STEPHEN J. WATSON and A. M. SMITH. Crosby Lockwood. 13s. 6d.

In the second edition of this book, which was first published in 1951, the authors bring up to date their account of the technique of silage-making and review the case for ensilage in present-day farming.

While admitting the possibility of sterilizing or partially sterilizing green material by various additives, they still feel that preservation of the crop in the by-products of its own fermentation is the most practicable method in this country, at least until meta-bisulphites have been more thoroughly tested. Accordingly, the book is devoted to a detailed account of the theory underlying the production of desirable organic acids—particularly lactic acid—and the numerous practical devices which have been evolved to control the process. It is an intriguing tale of a struggle amongst the lower organisms, and of man's efforts to encourage those he wishes to become dominant and to suppress the "evil-doers". Like many other working hypotheses, it is a blend of strictly scientific reasoning and empirical facts, for though the course of events (once the lactic bacteria begin to get the upper hand) is clear enough, we have as yet no very convincing evidence of why they are able to get ahead of their competitors.

The rules for silage-making and the results which can be achieved with various materials under various conditions are set forth clearly, supported by abundant evidence in the shape of yields and analytical data derived from the senior author's original researches. The reader gets his information, as it were, from the horse's mouth. But it is guarded advice. He is constantly warned to beware of averages and to recognize the limitations of chemical analyses. The human senses must be called in to supplement the figures of the chemist when the feeding value of silage is being assessed.

The authors are concerned throughout to show that "silage can now be made on any farm without undue difficulty and with a minimum of expenditure". They devote particular attention to methods suitable for small farms. Thus, although the stack almost invariably results in a good deal of wastage, they point also to the ease and convenience of storage in this way and indicate the precautions whereby losses can be kept to a low level. The bulk of the silage made throughout the country is, however, on farms exceeding 100 acres, where teams of men and modern harvesting machinery are employed, and, therefore, the authors deal at some length with the range of implements now available.

The book ends with a comprehensive review of the costs of making silage, compared with those of other roughages. Here the authors find themselves in the position of builders on shifting sands, for when all the components of a cost account are moving about independently, averages calculated over a number of years are of dubious value. Nevertheless, for comparative purposes the use of averages seems fair enough. Silage is a relatively cheap fodder, even when the cost of extraction is added to that of making.

Owing to separate treatment of silos and silage-making, there is some repetition. That perhaps is no bad thing in a book which pleads a cause as well as states a case. As a whole, it may fairly be described as concise, authoritative and felicitously phrased. *Multum in parvo* might well be inscribed on the jacket.

W.B.M.

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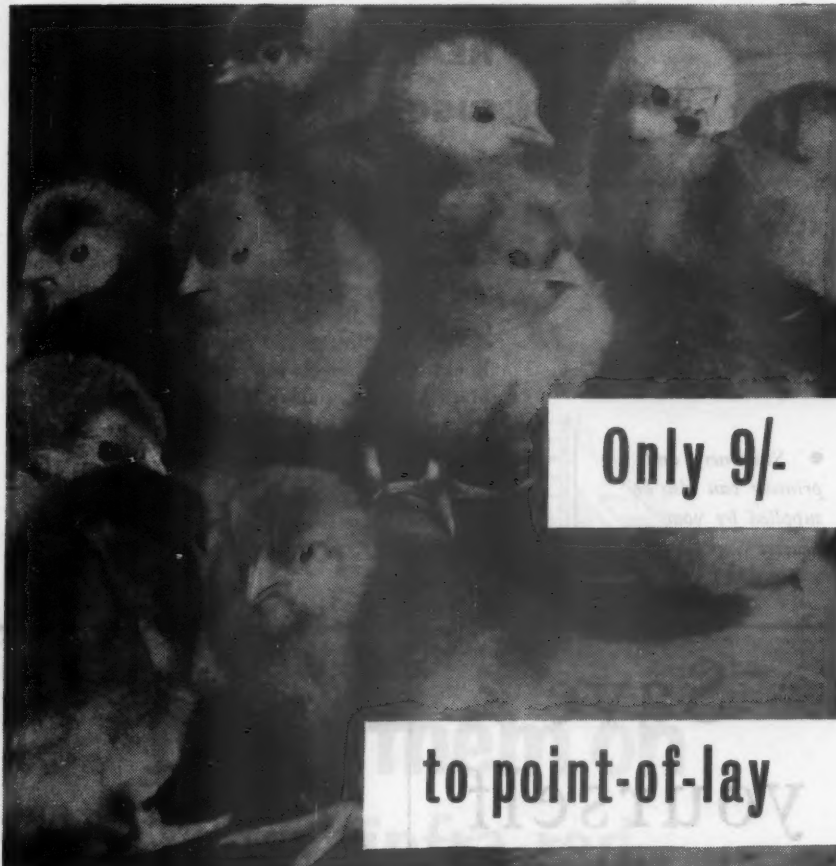
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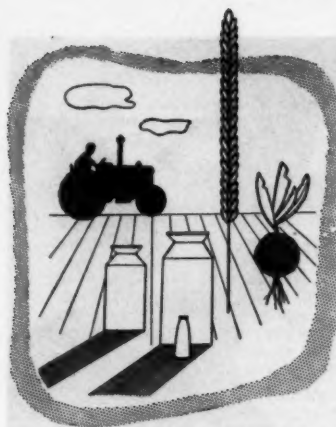


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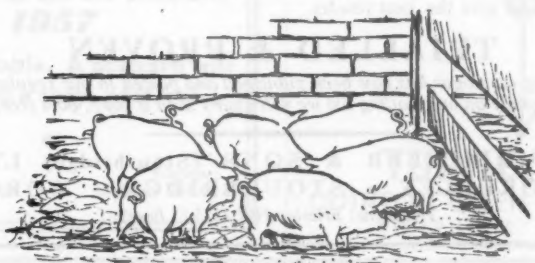
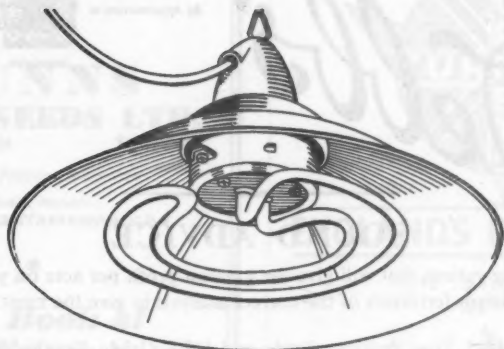
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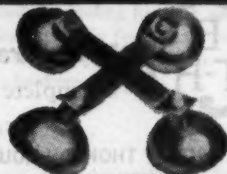
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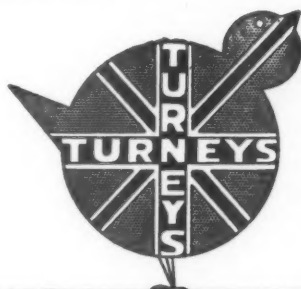
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